

PACIFIC DISCOVERY



FIFTY CENTS

Will Science Save the Saguaros?

CALIFORNIA ACADEMY OF SCIENCES

MAY - JUNE 1967

VOLUME X • NUMBER 3

Editor and Art Director: DON GREAME KELLEY; Managing Editor: ROBERT C. MILLER; Associate Editors: IRA L. WIGGINS (Stanford University), A. STARKER LEOPOLD (University of California); VERONICA J. SEXTON, BENJAMIN DRAPER, ROBERT T. ORR, ALLYN G. SMITH (California Academy of Sciences); Special Correspondent: THANE RINEY (Wellington, New Zealand)
Advertising and Circulation Manager: GARY B. BARRETT

WITH VACATION DAYS almost upon us, it's high time to break out the maps and brochures, and to look over the travel books, and to be chary of the advice of well meaning friends. In the latter regard, we have certain friends who are not only well meaning, but they are also not trying to lure us into any particular vacation trap. Their approach is wholly above board, their views broadminded. Their aim and m.o. is nothing less than to lay before us a comprehensive panorama of the entire Western vacationland, nicely packaged in geographical units. Recently I asked them to send over the package — and a package of "Pacific discovery" it was, only they call the components *Sunset Discovery Books* (our friends, by the way, are Paul Johnson, editor, and George Pfeiffer, sales manager of the book department of Lane Publishing Company, and Martin Litton, *Sunset* travel editor). Well, these books are almost diabolically contrived to make you, one summer morning, get up, pack up, lock up, and shove off — to the place you could resist the least after losing yourself in their inviting pages for a few of those first long early summer evenings. These are the titles: *Gold Rush Country: Guide to California's Mother Lode & Northern Mines* (the latest, foreword by Oscar Lewis, endorsed by the California Historical Society, 1957, \$1.75) *Discovery Trips in California* (1955), *Oregon* (1956), *Washington* (1956), *Arizona* (1956), *Mexico* (1955); the *Hawaii* (1957) is endorsed by Pacific Area Travel Association (these six are \$1.50 each; all of them run from 96 to 128 pages). To put in a completely unsolicited editorial plug: not only are these books highly attractive, with their profusion of photos; their texts are authoritative and explicit; the shaded relief maps are drawn to a high cartographic standard. Besides these, there is a *Pacific Area Travel Handbook*, a *Western Campsite Directory* (\$1.00 each), and the several sportsmen's atlases. In short, from their central H.Q. in Menlo Park, California, the publishers of *Sunset* magazine have set out to cover the vacation front, and we think they are doing a very fine job of it indeed, in these *Sunset Books*.

Next issue, our Reviews will be full of suggestions for summer reading, including many more travel items as well as "background" reading which will increase your enjoyment of the places where you stay long enough to absorb some history, both human and natural.

THE MANAGING EDITOR, Dr. Robert Cunningham Miller, who happens also to be director of the California Academy of Sciences and a zoologist, expressed his no uncertain feelings about the design of automobiles as an extension of the human biota, in these pages once before ("Mythology of the American Automobile," September-October 1950). If car manufacturers fail to take heed, he is likely to do so again. . . . ¶ A frequent contributor, Annette Richards has recently added Parent to her by-line. Warmest congratulations to the Parents, of Tucson, Arizona. Hers is the second in a series of articles on important Western museums. . . . ¶ Harriette Wilbur Porter comes in to PD, for the first time, from Escondido, California. . . . ¶ One of our earliest contributors, Philip Ferry has lately returned to San Francisco from a leisurely trip around the world, with an extended tour of South America as a chaser. Joe, as his friends call him, is both a veteran and an inveterate traveler — an incurable case. . . . ¶ William A. Bardsley writes from Tucson, under the banner of Western Ways Features. It was a pleasure to visit with him recently in the editorial office at the California Academy of Sciences. And that reminds us to say that PD readers as well as writers are welcome to come and see us in the Golden Gate Park if vacations bring them to San Francisco.

D.G.K.

Copyright 1957 by California Academy of Sciences

PRE-DISCOVERY

IN THIS ISSUE

EDITORIAL: <i>Automania—1957</i>	1
<i>A Museum for the World's Craftsmen</i>	
ANNETTE RICHARDS PARENT	3
<i>Fire and Ice—New Mexico's Volcanic Landscapes</i>	
HARRIETTE WILBURR PORTER	10
<i>The Little Colorado Runs Dry</i>	
PHILIP FERRY	18
CONSERVATION: <i>Will Science Save the Saguaro?</i>	
WILLIAM A. BARDSLEY	24
REVIEWS	30
FROM THE READER	32



THE COVER

ARIZONA ATTRACTION: the giant saguaros. Photograph by Western Ways Features, Tucson, Arizona. (See also pages 25-29.)

Pacific Discovery is published bimonthly at Gillick Press by the California Academy of Sciences. Publication office: 2057 Center Street, Berkeley 4. Editorial, Advertising and Circulation offices: Golden Gate Park, San Francisco 18. Annual subscriptions: U.S., \$3; Foreign, \$3.50. Single copies, 50¢. Members of the Academy subscribe through their dues. Entered as second-class matter, February 17, 1948, at the Post Office, Berkeley 4, California, under the act of August 24, 1912.

A JOURNAL OF NATURE AND MAN IN THE PACIFIC WORLD

THE FRENCH PRESS has been somewhat less than complimentary to the 1957 models of American automobiles. The Paris newspaper *France Soir* described the automobile show in New York last December as "a mass of good-looking women surrounded by metal monsters," and went on further to comment on the pulchritude of the ladies and the excellence of the floor show at the expense of any kind words for the product being advertised.

This might be attributed to Gallic gallantry and the traditional French preoccupation with feminine charms, except that the article went on to describe the automobiles, collectively and pointedly, as resembling "a drunken man's dream of a fish."

The reaction in America to the new cars thus far has been generally good and, notwithstanding higher prices and tighter credit, orders are piling up faster than the cars can come off the assembly lines. This may be because we are conditioned by advertising to like what we get, or because we have not enough basis in experience for evaluating the 1957 models. It could even be due to dissatisfaction with the cars turned out the previous year. When we complained to our dealer about an annoying "klunk" in the automatic shift of our 1956 dream car, he replied comfortably, "They'll get rid of that in 1957."

But in this family we like the 1957 models even less than the 1956. They are longer and lower and have more horsepower; but they were already too long to park, too low to sit in, and had enough horsepower for a ten-ton truck.

Automobile design has reached a new low, and the manufacturers are proud of it. Different companies vie with each other in their claims of having lowered the top of the car three, four, or five inches. One 1957 sedan, in the luxury class, is announced to be eighteen feet long but only fifty-five and a half inches high. Perhaps the theory is that automobiles, having become too long to go in the garage, should be made low enough to go under the front porch.

One recent advertisement pictured two men shaking hands across the top of a low-slung car. Here is a convenience of the new cars that many of us might not have thought of, and it was nice of the advertising men to think of it for us. But still it has its limitations. This method of shaking hands may be useful in a parking lot, or when waiting at a traffic light; but, barring a change in our mores, it will never be popular in the drawing room.

It remained for an outdoorsman to think of an idea

which must leave the advertising fraternity green with envy. A writer in *Field and Stream* reports that the top of his new sedan is just right to serve as a rest for the barrel when aiming a high-powered rifle. This seems pretty nearly the direct antithesis of using a car to shake hands across, but it does show the versatility of the modern automobile.

But here again we encounter limitations. Shooting across the top of a car appears to be slightly illegal. There are pretty explicit laws against shooting on a public highway, and nobody in his right mind is going to drive a car with eight inches of road clearance anywhere off a public highway. Furthermore, using the top of a car as a rifle-rest precludes any coverage of the immediate foreground (the writer in *Field and Stream* cautions against shooting the paint off the top of the car!). The quarry needs only to run toward the car for shelter, wait till the hunter has emptied his rifle, then run around the car and bite him.

Let us turn from the occasional or incidental uses of the new cars to practical, day to day matters. In a 1957 automobile you sit more or less on the floor, with the steering wheel in your lap and your feet out in front of you in a posture favored by chimpanzees, orangoutangs, and human infants under the age of two. The drive-shaft, once decently concealed beneath the floor, has been elevated till it can almost serve as an arm-rest, incidentally using up the foot-room of the third passenger who used to ride in the front seat.

What has become of that slogan dear to advertising men a few years back, "Three six-foot men can ride in the front seat?" Perhaps it should be revised to read, "Six three-foot men . . ." Today's cars are built for midgets.

This brings us to the problem of getting in and out. It used to be that you could step into an automobile as easily as you board a streetcar or bus. Nowadays you work your way into a car, and you go in backwards. You assume a squatting posture, plant your posterior firmly on the seat, then pull your head, arms and legs in after you, like a hermit crab retreating into a periwinkle shell.

The most difficult, not to say dangerous, cars to get in and out of are some of the new two-door hardtops, in which the center post has been eliminated and the side wall of the car terminates in an abrupt, forwardly-directed angle that gives you a sharp jab in the ribs as you try to scrape by. The only safe way to cope with these models is to lower the glass, shut



"Everybody ready?—let's synchronize the meters . . . Now!"
Courtesy of George Lichty and the Chicago Sun-Times Syndicate.

the door, and climb in and out through the window.

The shortcomings of today's cars, and the willingness of the public to tolerate them even for a moment, are due primarily to the sport car craze. A sport car may be defined in a general way as any car that is too little, too uncomfortable, too noisy and too expensive.

Time was when the dedicated motorist took pride in the silence of his motor. It was his ideal to have it function as quietly as the ticking of a watch. But no longer. Today when he steps on the accelerator he expects the car to give a deep-throated bellow, leap forward with squealing tires, and go roaring down the highway with a noise like a Diesel truck.

The automobile makers are trying to build a family car that will look and act like a sport car. This is just as impossible as making women's shoes big enough on the inside and small enough on the outside. It simply can't be done.

Even taxicabs have become involved in this strange mid-twentieth century madness, because taxicabs are merely contemporary sedans. Taxis used to have a commodious back seat in which three people could ride, complete with legs, feet, and several pieces of baggage. There were even a couple of "jump" seats for extra passengers. In the newest taxis the driver has the best seat, with the most leg room. The passengers accommodate themselves as best they can to what is left.

It used to be possible to recognize a taxi a block away by its distinctive color or colors. But in the rash of colors by which the automobile manufacturers have sought to distract the buyer from other features of a rather dubious product, taxicabs have been submerged. Lately we stood at a busy corner vainly hailing yellow, black and white, and red-top sedans for five minutes before one turned out to be a taxi.

Motorists are not likely to weep over the problems of taxi riders except occasionally when they are grounded in a strange city. But many of them are going to worry because it has become increasingly difficult to identify a police car.

For years police cars in most states have been identified by distinctive colors or markings. But the automobile makers have crossed us up. Today you can't distinguish a police car till you can see the officer's uniform, when it is usually too late to do anything about what you were doing.

This may have simplified police work in one direction, but it has enormously complicated it in another. The three-tone hard-top in which the bank robbers drove away will be described in six different ways by as many witnesses. Complicate this problem by the currently prevalent use of such off-shades as Bengal rose, charcoal gray, mauve, beige, and fawn, and you have cars which are, for police purposes (indeed for any purpose), almost literally indescribable.

Notwithstanding — or maybe partly because of — this spate of colors, the new cars are monotonously alike. Automobiles used to have individuality, and you could tell a Ford, a Chrysler, or a General Motors product as far away as you could see it. There was also a car for every pocketbook. It has been pretty

generally forgotten that in 1926 a Ford touring car, complete with self-starter, cost \$310 at the factory. The Model-T Ford has gone the way of the Ingersoll watch, and with it has gone the all-important *price spread*. There are no longer any cheap cars, nor any that are really expensive unless you go in for gold plating or mink upholstery.

Perhaps it is a step toward democracy if you can no longer tell a Chevrolet from a Cadillac without your reading glasses; but for many low-income families it is also a step toward insolvency. People are buying low-priced foreign cars because they cannot afford the luxury of the cheapest American car. We are pretty sure that if one could buy a new Model A Ford, or a Chevrolet or any other good car of comparable vintage, for \$1500, the Volkswagen would not be able to make a dent in the American market. It is a curious anomaly of automotive history that America, which produced the original low-priced car, is no longer even trying to compete in that field. This is not so much a reflection on our automotive engineering as it is on our economic thinking.

We wonder whether cars have not been evolving too far, too fast, and in the wrong direction. All the statistics show that the human race is getting taller, but the automobiles have been getting lower.

We keep thinking about that French comment that our 1957 cars suggest a drunken man's dream of a fish. Some years ago Professor William K. Gregory designed an exhibit for the American Museum of Natural History entitled, "Our Face from Fish to Man." Perhaps it should now be matched by a companion exhibit entitled, "Our Car from Horseless Carriage to Fish."

Along with other excesses, the new cars have set a new record for gadgetry. By pushing buttons one can shift gears, open and close the windows, raise or lower the radio antenna. There are power brakes, power steering, and what is described as a "six-way power seat." One can even open and close the trunk without getting out of the car. But why? From looking at the automobiles one would assume that the contemporary motorist is not only a midget, but an invalid as well.

It is our intention to hold on to our present automotive equipment as long as possible, waiting for the current trend in automobile design to reverse itself. And reverse itself it will, just as surely as the old high hood and sloping back gave way to the new low hood and high fish-tail. It will reverse itself for the simple reason that it can go no further in the present direction.

Already the wheels have been made smaller to lower the car. It is unlikely that the manufacturers will take the next step and mount the chassis on roller-skates or casters. And if the body gets any lower, the only recourse for a person of normal build will be to get a Western saddle and sit astride the hood.

There is reason not only to hope, but to believe, that automania has reached its peak in 1957, and run its course; and that 1958 will witness a return to sanity, and to such old-fashioned principles as economy, comfort, and convenience.

R.C.M.



A MUSEUM FOR THE WORLD'S CRAFTSMEN

THE ART OF THE CRAFTSMAN IS A BOND
BETWEEN THE PEOPLES OF THE WORLD

ANNETTE RICHARDS PARENT

SANTA FE'S MUSEUM OF INTERNATIONAL FOLK ART

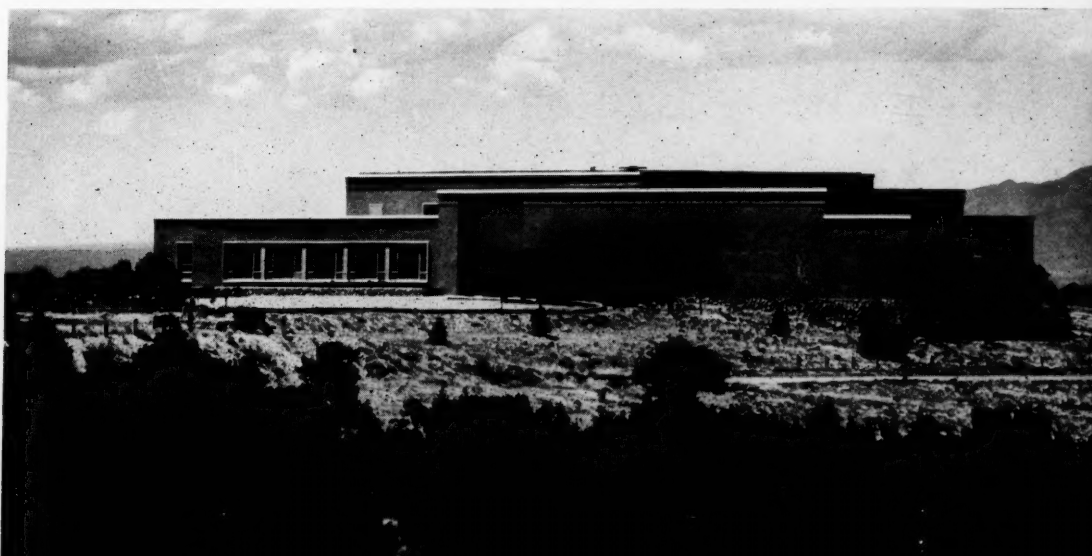
THE MUSEUM OF International Folk Art in Santa Fe, New Mexico, is a museum by the peoples of the world for the peoples of the world. Its treasures were once the everyday tools of black, brown, red, yellow, and white peoples, tools lovingly decorated for pure enjoyment, not made for sale or export or museums in far lands, but simply for local use.

Some form of self-expression is the answer to an industrial society where work is often uncreative and mechanical. And the folk arts of the world point the way, believes William J. Lippincott, Associate Director in charge of this one of the five sections of the Museum of New Mexico, all under the direction of Mr. Wayne Mauzy.

This new museum, which is two miles from the center of Santa Fe and overlooks the piñon-juniper plain stretching south towards Albuquerque, has been open to the public only since September, 1953, but already it is making an impression all around the world. In its first year, visitors from 63 countries passed through its doors — the museum is justly proud of this. Almost one-fifth hail from abroad, a high percentage for so small a museum. Almost two-thirds come from out-of-state. But even if they all came from New Mexico, their backgrounds would be varied. For the Museum of International Folk Art is in the heart of at least three distinct cultures, Anglo-Saxon, Spanish, and Pueblo Indian. Four different flags have flown

"The art of the craftsman is a bond between the peoples of the world" reads the inscription over this museum door in Santa Fe, New Mexico.

*Photographs courtesy of
the Museum of International
Folk Art, Santa Fe.*





Swedish wall painting of 1839, detail:
one of the Magi on the journey of adoration—
Southern School. The Bible in modern dress!

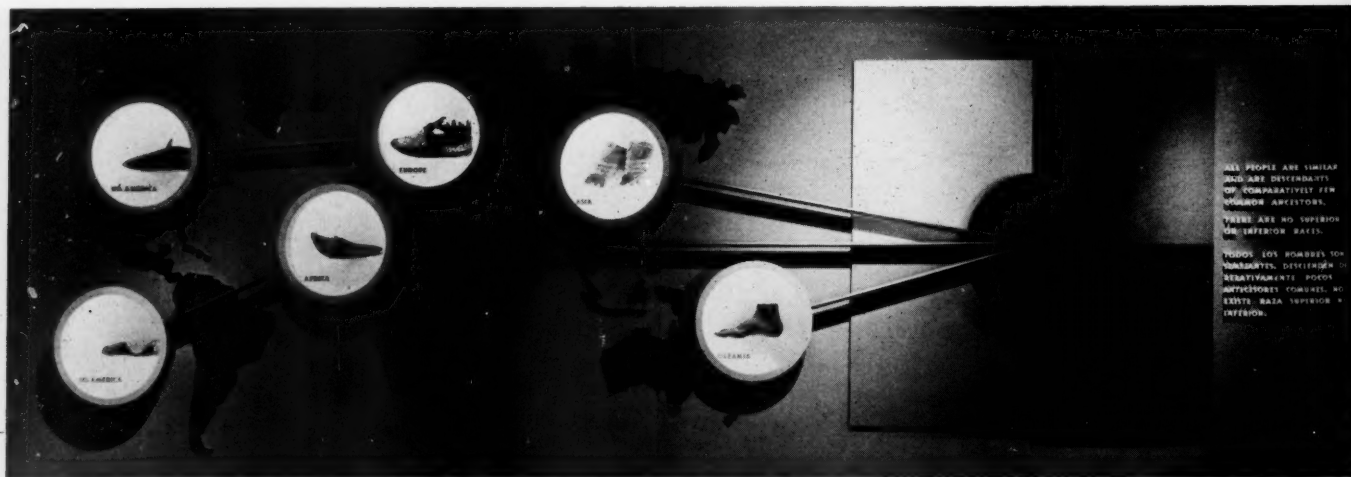
over the Governor's Palace on the main Plaza of Santa Fe — Spanish, Mexican, Confederate, and American.

Here in Santa Fe, as in all lands where many cultures meet, the result is enriching to all. And although Director Lippincott claims that the museum has "no grand and glorious goals," nevertheless the motto above the entrance expresses the

When you enter the functional building, you cross the spacious lobby, push open a glass door and find yourself in the exhibition gallery; you are at once impressed by the rich colors not only of the folk arts themselves but also of the decorating scheme. You notice that the writing on the wall is in three languages — French, Spanish, and English. This reminds you of the international character of the museum. And, as you begin to read, you discover that you are in the "orientation area." You are told here that all mankind is one, that no people has the corner on intelligence, and that love of beauty and skill of craftsmanship are common to all. A variety of shoes from different countries illustrates not just the differences between peoples but also their universal ingenuity in making a serviceable, attractive, and climatically suitable shoe from local materials.

Again and again, around the room, you are impressed by this same idea. Hats may be made of feathers, beads, bone, coins, felt, ribbons, lace or wool, but each one filled a need for the craftsman who made it, and he used what he could find nearby. Each one was ideally suited to the village where it was made.

Here are furniture, household utensils, religious



central idea of the institution — "The Art of the Craftsman is a Bond between the Peoples of the World." This is the first and only folk art museum with a distinctly international emphasis; 57 countries are represented in its collections.

- 4 ▲ Orientation begins here: "All people are similar and are descendants of comparatively few common ancestors. There are no superior or inferior races."
➤ Ballet for modern music: the manikins before dressing for the Costume Parade.





ornaments, clothing, dolls, jewelry, and weapons which were made for use in the everyday lives of Norwegians, Hungarians, British, Mexicans, Peruvians, Chinese, Japanese, Indians, Africans, and South Sea Islanders — in short, folk arts from just about everywhere. Some of the collections are grouped according to nationality while others are arranged according to type of articles — like dolls, shawl pins, costumes, jewelry, linen, shoes or hats.

The line between folk art and non-folk art is sometimes hard to draw. Folk art is a decorative art used to beautify ordinary daily tools and utensils and is not intended as ornament alone. It is hand made from native products and clings to traditional designs. The doll case with about sixty dolls from twenty-four lands poses a question on this point. Here you see dolls made of straw, pine cones, corn husks, moss, wood, bone, ivory, cotton, silk, and porcelain. Some are obviously crude and hand-made while others seem more sophisticated in material and pattern. And yet they are all included in the case because the basic motive in



▲ A Swedish couple (compare painting, p. 4) leads the Costume Parade. ➤ Close-up of the Quechua Indian couple seated at right end (ABOVE). The husband spins wool for the warm clothes needed in the Andean highlands of Peru.



A skilled preparator mends a New Guinea mask just arrived at the Museum. Everything is classified, photographed, fumigated, and repaired before going either to show cases or to storage.

their creation was to please children, the most basic "folk group" on earth.

While there are excellent facilities for scholars to pursue their studies along their particular lines in this museum, its main appeal is for the everyday visitor. There is no "snob appeal" here. You feel at home. Upon leaving the "orientation area" you are greeted with native friendliness by the leaders of the "Costume Parade," a Swedish manikin couple. With the typical Old World posture of welcome, he bows and doffs his hat and she curtsies to you.

Behind this pair is a procession of about thirty other wooden manikins in the native dress of many lands, a superb array of costumes. Embroidered, woven, and appliquéd, beruffled, gathered, beribboned, pleated, and rich with lace are these exquisite suits and dresses of yesteryear. They stand back on a raised platform covered with pebbles and are all busy with various activities: flirting, dancing, gossiping, getting married, or otherwise absorbed in everyday life. There is wool from Peru, natural linen from Jordan, buckskin from the American prairie, and even a palm fiber suit from the Micronesian Islands.

A Chinese boy flies a kite high on the ceiling while another little boy from Chichicastenango,

A ceremonial dance mask from Bali.

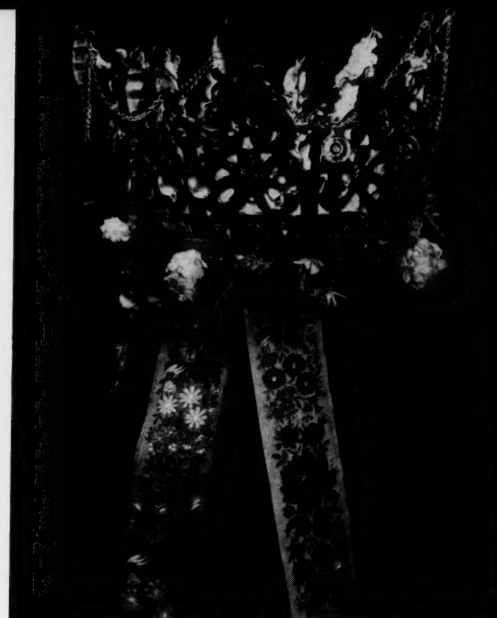


An 18th-century Norwegian bridal crown is perhaps *the* crown of the Folk Art museum's collection. It is silver and silver-gilt.

Guatemala, sits telling fortunes with red divining beads. While a German woman knits contentedly, a Norwegian matron busies herself serving tea with a brass teakettle. An Arapaho squaw watches her baby on its beaded cradleboard while a proud Blackfoot chief from Montana rides a wooden horse and wears a feather headdress that trails almost to the ground. A Polish woman makes paper cutouts with a pair of scissors. A Tarascan Indian woman from the Lake Patzcuaro region of Mexico has filled a brightly-painted gourd bowl with flowers. A Greek inspects a scarf shown her by a Rumanian. A Hungarian swain pays his court to a Czech maiden with a bouquet of flowers. A straw horse on her lap claims the attention of a Bolivian. A Peruvian highlander spins wool while his mate watches. And it is evidently the wedding day of a Tehuana from southern Mexico, judging by her decorative dress.

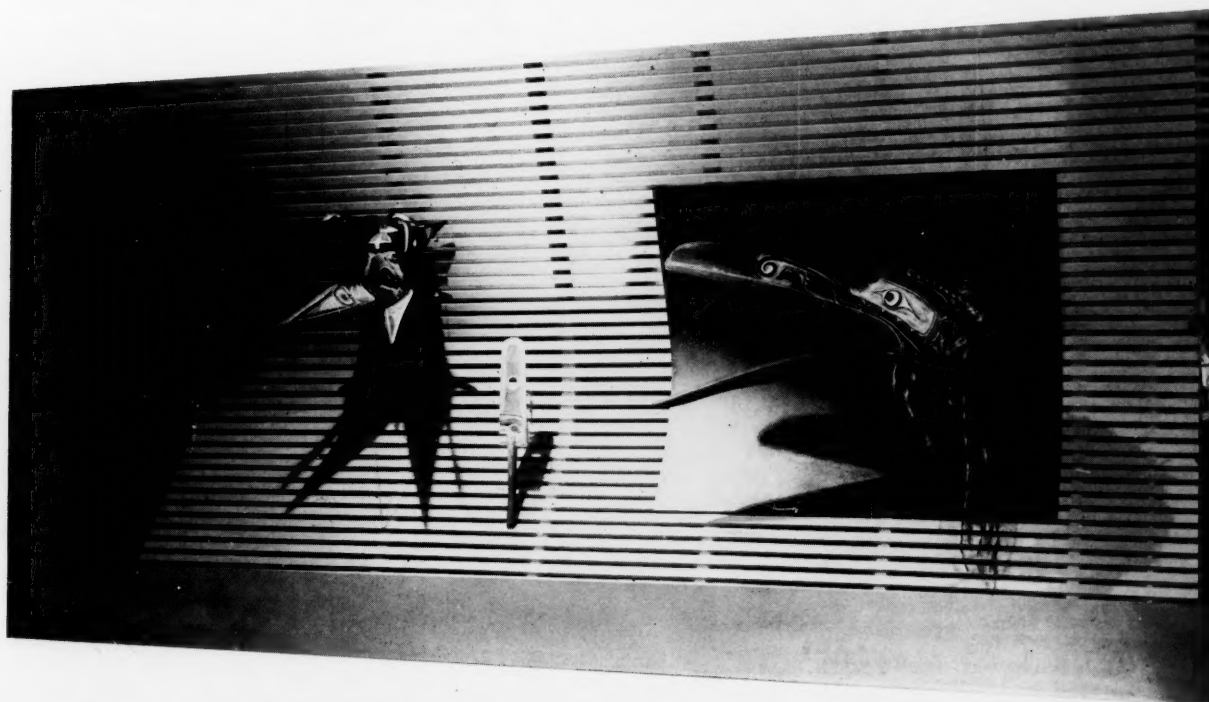
One of the intriguing things about this central attraction around which the other exhibits revolve is that all of the manikins are without faces, hands, or feet. And yet this fact, combined with their preoccupation with daily life and their active stances, humanizes the whole gallery. It is these very people who created the folk arts around them in the other displays. Their faceless figures do away with differences of skin color and emphasize rather the universality of ordinary routine activity and the magnificence of folk costumes everywhere.

Visiting this museum is similar to shopping in a



department store. The wooden manikins display the costumes including skirts, blouses, aprons, bodices, trousers, vests, jackets, sashes, scarves, and belts. If you were planning a world tour, you could do worse than to learn from the natives what to wear in their climates. The predecessor of the fashionable stole, the rebozo of Mexico, is very much in evidence. When you see the superb combinations of fuchsia, red, purple, orange, yellow, and pink in the Guatemalan costume, you will forget all preconceived notions about which colors go with which!

In the shoe section you may choose among elev-



Kwakiutl Indian wooden masks (British Columbia, modern); two Eskimo masks at left. A showcase without glass.

Russian peasant earring of white and yellow metal
with coral and turquoise: 19th century or earlier.

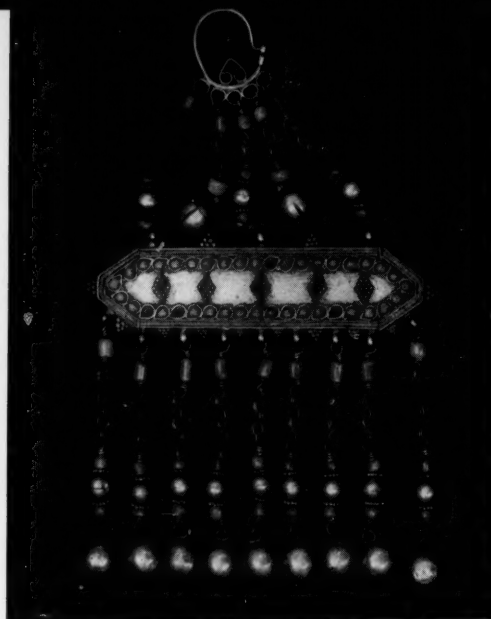
en styles of footgear including an Arabian leather sandal, an 18th century satin British court shoe and clog, a Dutch wooden sabot, a Japanese geta and tabi, and a South American basket-like woven sandal.

The variety in size and type of merchandise is pleasing and restful to the eye. After looking over the Scandinavian household articles like mangles, foot warmers, spindles, cookie molds, and sleigh ornaments, you may like to study less mundane things in the jewelry selection nearby. If you need linen, you could not do better than to see the colchas, serapes, aprons, runners, bedspreads, cushion covers, and tablecloths that have been brought from China, Guatemala, Spain, Peru, Greece, Bulgaria, Italy, Hungary, Scandinavia, and the Belgian Congo.

All parts of the collection are valuable, but some objects are particularly treasured. Director Lippincott hesitates to point out which they are as he wants every visitor to enjoy the exhibits according to his own tastes and not according to what someone else tells him are "choice." But the Norwegian Bridal Crown, which dates back to about 1750, is distinctly "choice." It is made of different metals encrusted with jewels and artificial flowers, and dangles seven different colored floral ribbons. A village would own one, and its wearing signified the maidenhood of the bride. A remarkable set of Swedish wall paintings, some of which depict Biblical themes, are also highly prized. And remnants of the intricate textile handiwork of the "master weavers" of pre-Conquest Peru are held in high esteem. There is even a shrunken human head of the Jivaro Indians of Ecuador!

Despite their high quality, folk arts of Asia have been relatively unappreciated because they were overshadowed by the wealth of fine arts which that part of the world has produced — including sculpture, painting, ceramics, and rich textiles. Many of these folk arts are on the way out today under the influence of factory-made goods. But it is heartening at the same time to know that in some countries they persist while in places like India, they are actually being revived. Ceramics, a file, a scribe's pencease, a batik textile, shadow puppets, toggles, masks, and a medicine box enrich the Oriental collection of folk arts on display.

One of the most striking of all exhibits is the one of the shields, weapons, spears, head rests, and sculptures from Oceania, Africa, and Indonesia.



The rich assortment of hand-carved wooden tools and figures is arranged on a sloping platform of pebbles resembling a beach. The lighting streams through slats, thus making an intriguing pattern of shadows. Piano wire separates visitors from the objects.

The results of the meeting of two cultures can be seen in the American Indian folk arts. For not only did these native Americans continue to make their rawhide drums and buckskin moccasins but they also incorporated into their own culture the use of the white man's materials. Side by side on the same object, they painstakingly ornamented their daily utensils with both their time-honored decorating material of porcupine quills and with the new multi-colored trade-beads of the white man. The result was a new folk art.

The folk arts of the world are not static. They are always in the making, slowly changing. Each craftsman creates his own, applying much of the old and some of the new. Though the basic patterns, materials and techniques are traditional, handed down from father to son for generations, nevertheless a gradual evolution does take place. A recent exhibit in the museum illustrates this graphically with an artificial experiment that speeded up a process that otherwise might take centuries to develop.

In 1949, seven Eskimos were sent to Taxco, Mexico, under the auspices of the Indian Arts and Crafts Board of the Department of the Interior to work under skilled Mexican silversmiths and become familiar with new materials. They produced some two hundred objects in silver, gold, ivory,

baleen, lapis lazuli, and Shungnak jade. The results appeared in this exhibit. On one side were typical Mexican crafts and on the other were typical Alaskan crafts while in the middle were the new crafts, which reflected some of each but which could not be classified as either Mexican or Alaskan. A new art thus grew out of the meeting of these two distinct cultures.

While we undoubtedly regret the passing of the folk arts of the past, the Museum of International Folk Art hopes to encourage the folk arts of the future. Through the wealth of designs, techniques, materials, and use of colors, visitors are inspired to try something creative themselves. Folk music from far and near is piped into the gallery and lobby and it blends together the strikingly exotic with the more familiar. Demonstrations and lectures enlarge visitor appreciation, knowledge, and understanding of some of the skilled techniques used long ago in fashioning some of the folk arts. The "How To Do It" sessions revive some skills that have almost been lost in modern times. And who knows which visitor may learn one of these techniques and adopt it for use in some new art form? A busload of Campfire Girls and Girl Scouts from Albuquerque spent a whole day recently visiting the museum. Dressed in folk costumes, they studied the folk arts, folk danced, sang, watched folk movies, and picnicked. It was all their own idea and this is the kind of response the museum encourages.

The late Miss Florence Dibell Bartlett of Chicago made this museum possible by donation of funds and the basic collection of folk arts. Her message at the ground-breaking ceremony in 1950 read, "May the breaking of ground for the erection of the Museum of International Folk Art on August 14 symbolize the breaking down of barriers between nations and the building up of mutual understanding among nations." And if the cooperation and helpfulness of institutions and individuals from all over the world with information, museum know-how, and donations are any criteria, then Miss Bartlett's dream is being realized. Gifts from other museums, from the French Government, and from myriad individuals who walk in, unannounced, bearing gifts from their homelands have enriched and rounded out the initial collection immeasurably.

Whatever your interest — whether Eskimo masks, Yugoslavian toy cradles, Russian earrings, New Mexican bultos and retablos, English egg

stands, Northwest Coast Indian shamans' charm necklaces, Chinese dolls, South American shawl pins, Persian filigree plates, Syrian harness ornaments, Scandinavian ribbon looms, South African sculptures, or the folk costumes of all lands — you will be enlightened and entertained. Folk arts are living arts created by peoples everywhere now and in the past. And the Museum of International Folk Art serves as a clearing house for all citizens of the world.



For further reading

What is "folk art"? Various sources at hand, including unabridged dictionaries and the best encyclopedias, do not give us the term — although folk-dance, folklore, and folk-music appear even in the concise dictionaries. Taking the Merriam-Webster definition of folk as "a group of kindred people, forming a tribe or nation" and especially, in such a group, "that great proportion of its number which determines the group character and tends to preserve its civilization, customs, etc., unchanged," we may apply the term art as it fits best — and applied art is what we get. Further semantic research, however, may show this to be at best a misfit. Our dictionary says applied means "put to practical use" while a new Dictionary of Arts and Crafts (see below) calls applied art "the extra ornamentation" added to something.

To pin it down somewhere, it seems to us that folk art is simply the traditional or characteristic forms of expression by which a given people makes its objects of everyday use — clothing, utensils, tools, weapons, buildings — more pleasing to the senses. Thus we would include not merely the decoration of a handtool or chair but the design which makes it feel and function right as well as look right even before ornamentation is added. To ignore design in any such definition is to cheapen the word art. Folk art may be hard to define, but it has been much described and illustrated.

Folk Art of Primitive Peoples: Six hundred decorative motifs in color, forming a survey of the applied art of Africa, Asia, Australia and Oceania, North, Central, and South America. By Helmuth Th. Bossert. Frederick A. Praeger, New York. 1955. 15 pp., 40 full-color plates. \$12.50.

Since this 10 x 13.5-inch book is designed for the purpose of illustrating as accurately as possible a large number of examples, the few pages preceding the sumptuous plates contain only a brief introduction. It is explained that "absolute fidelity in form and color" was obtained by hand-coloring photographic plates "as faithfully as possible according to the originals" which are all in museums in Berlin, Hamburg, Bremen, Stuttgart, and Vienna and in one private collection. The purpose of the work is clearly stated: "We demand ornament on objects for daily use: material, embroidery, vessels, wall-paper, etc., and especially for the many different applications in commercial art. This work will be a source of ideas for all artists working in these fields." We may use these motifs; we may revel in the beauty of these pages; Bossert reminds us, however, that the inspiration of their creators cannot be recaptured — it is, in each instance, of a time, a place, and a cultural drive conspiring to produce it. Meaning escapes, but form remains, to be combined and applied anew.

"Details of Plates" are brief, e.g., "Pattern on a blanket.

Fire & ICE-

Nazca." The examples are indexed by their 35 different processes or kinds, such as Appliqué Work, Baskets, Masks, Woodcarving. The plates are superbly printed on heavy coated stock. (Your bookstore may be out of this item but the publisher assures us a new supply is coming soon.)

The Art of Primitive Peoples. By J. T. Hooper and C. A. Burland, with 116 photographs of specimens from the Hooper collection by R. H. Bomback. Philosophical Library, New York. 1954. 168 pp. incl. halftone plates. \$7.50.

A fascinating view of the world of primitive art is put before us here both through the graphic showing of objects chosen and described by a discriminating collector, and in the general account by an authority which is happily free of technicality and high-priestly posing. We see where the artist fits in the cultural scheme; what, with respect to art, relates so-called primitive societies to our own and what sets them apart; some geographical and historical factors; the importance of religion in primitive art and the almost sanctity it gives the artist; and some keys to understanding to help bridge the gap over which complete communication is denied us. Then there are three absorbing chapters exploring origins, discoveries, developments, and exchanges between old and new worlds — Mr. Burland is not carried away by extremist views on either side of Polynesian-Amerindian controversy. This part takes us easily to a major descriptive work:

Medieval American Art: Masterpieces of the New World Before Columbus. By Pál Kelemen. The Macmillan Company, New York. 1956. xxii + 414 text pages, 308 pp. halftone plates, 33 pp. Catalogue of Illustrations, etc. \$15.00.

First published in 1943 in two volumes, this now classic work marks the coming of age of studies of American art, not as a phase of anthropology or archeology, but as part of the mainstream of world art history. It of course takes us beyond the stricter confines of folk art. We are still in the realm of pottery, textiles, ornamental metalwork; but we come on up into that of large-scale sculpture and monumental architecture as well, compassing the whole of which folk art is an element. Hungarian-born Pál Kelemen has marshaled pictorially, described, and analyzed a large enough array of their products to convince anyone that the great art producing areas of the Americas are worth our attention and interest fully as much as those of the ancient and medieval Old World. Furthermore, the legacy of material remains which the subject matter of this book represents is virtually our only key to the nature of the civilizations that preceded our own on these continents, and some knowledge of them should be part of our cultural heritage.

Art of Asia. By Helen Rubissow. Philosophical Library, Inc., New York. 1954. xiii + 237 pp., 84 text figs. in halftone and line, endpaper map. \$6.00.

The art of the largest continent, extending back thousands of years to the oldest civilizations, and including many of man's most splendid creations, could only be briefly introduced in a book much larger than this. Yet here in small format is more than adequate introduction to a field which takes us from prehistoric rock scratchings in Arabia to the stylized Japanese woodcuts of Kiyonaga and Utamaro.

Living Crafts. B. G. Bernard Hughes. Philosophical Library, New York. 1954. 192 pp., 21 halftone plates, numerous text figs. in line. \$4.75.

The "folk" artist is a craftsman or has one right behind him. They are both at the meeting place of art and manu-

(Continued on page 32)

EASTERN and Mississippi Valley tourists correctly diagnose a certain part of western New Mexico when they declare, "This whole country seems to be burned to cinders!" For the San Jose River-Zuni Mountains area owes its technicolored aridity not only to climate but also to volcanic activity so recent, geologically, that thousands of square miles are blanketed with hard, deep volcanic ash and lava rivers, too new to harbor vegetation except in earth-filled crevices.

Erosion needs time to disintegrate lava sufficiently for fertile sedimentation. New Mexico, the Sunshine State, has sketchy rains and snowfalls, so windblown sand is the chief erosive agent. But the dark lava "glass rivers" glitter in the brilliant sunshine, oxidation brightening some of the lava's mineral constituents. The effect is that the many arid levels, sinks, canyon cliffsides, mesa façades, mountain rocks, of predominant shades of rich red, yellow, and orange, gleam with dazzling glory, especially when reflecting New Mexico's famous sunrises and sunsets.

Lava streams of black, dark brown, red, and blue crisscross the landscape in glassy ribbons for about 80 miles south and east of Gallup. Geologists have charted their twisting currents, curling eddies, waves, cascades, terraces, dikes, dams, conduits, tunnels, arches, and whirlpools. These motionless rivers of lava once flowed through canyons, down hill, up-grade, along high ledges, around curves, over and about obstructions. One river may cross an earlier flow which had already hardened, or ride it pickaback for several miles before going its own way.

This lava bed area lies across U. S. 66 between Albuquerque and Gallup, especially near the towns of Grants and McCartys on the Rio San Jose just east of the Continental Divide. It is partly on the Cibola National Forest, between the Zuni and Laguna Indian reservations and separating El Morro National Monument on the west from Acoma Pueblo on the east. This mountainous region culminates in 11,389-foot Mt. Taylor, east of the Divide, a high lava-carpeted mesa crowned with a lava cone glowing in color. Mineral facets on the cone carry on sparkling conversations with the sun. Below, the mountain's flanks and feet are well vegetated. Other large lava beds lie to the east of the Rio Grande and west of Carrizozo.

Volcanic scenery stretches away on both sides of the San Jose from McCartys, with many lava rivers and cinder sheets contributed by several neighboring peaks. The vast lava beds, or flow, which Mt. Taylor helped to create, runs southwestward from the bend between McCartys and Grants some 45 miles. On the

New Mexico's Volcanic Landscapes

HARRIETTE WILBURR PORTER

map this extensive patch of aridity resembles a sting-ray, tail to the northeast, with an extinct volcano "eye" in the top of its head, other cones warting its body, and side flaps marking a 20-mile width.

The Lava Beds are a sterile sink covering thousands of acres, kitchen midden of volcanic debris, a backyard vegetated in patches and spots. Acoma and other Pueblo people tell of the frightful Year of Fire when red rivers made the region so hot their ancestors abandoned their towns and fled the country. Geologists estimate that the fiery "Year" was really several, beginning about 900 A.D. The Rio San Jose survived the invasion of its bed by a lava river 57 miles long and up to 12 wide in places — a stream of rosy liquid rock driving Indian farmers from their corn patches and pueblos. It may be seen from highway and rail-

way both, west of McCartys, where they follow the San Jose closely for several miles. This lava river rose in a cone in the eastern Zuni Mountains which the Spaniards called El Tintero, "The Inkwell" — it cracked when full of boiling red ink. What spilled southward helped make the Lava Beds.

Picture the battle between cold water and boiling stone — the hissing, sizzling, steaming, and bubbling as the volcano's red-hot lava overflow plunged into the spring-born river! Eventually The Inkwell shut off the liquid flow from its spigot, while the cold mountain spring kept feeding the San Jose, but the river's banks were thickly coated with lava high above normal water level. The decorative spraying job dried as basalt finish, still intact in all its varied color. At one point in its downstream course the lava river, in-





stead of turning a corner into a side canyon, pushed a mile or so straight up a gentle grade and then slithered downhill on the other side.

The Year of Fire ended, and eventually the stricken area became cool enough to come back to. A strange memento of the volcanic years was found near Cebolita Pueblo — an isolated, deserted little one-room adobe dwelling, still intact except where a branch of The Inkwells' huge main stream had flowed through one wall, over the earthen floor, and out through another wall, the cooling lava freezing in its tracks, like a long dark snake caught out on a foray. The little house was maintained for centuries — the Indians cherish relics of all kinds, just as most people do — enduring witness of the terrifying Year of Fire.

Indian generations have carried a detailed and convincing story down through ten centuries, to be confirmed today by geological science which reads the record left in the "flowing hand" of lava. When Mt. Taylor, El Tintero, and other peaks were grumbling and growling, and spewing lava streams across the land, those fiery dragons destroyed all living

things in their path, if only with their incinerating breath. Fields they passed were scorched black. Trapped animals and men perished miserably. Survivors had to flee their blasted fields or starve.

The "Great River of Glass" has many of the formations flowing lava can make: roofed tunnels, unroofed conduits, and pipes empty or packed with lava substance. A lava flow hardens first on the outside, while the hot liquid under the crust continues to flow, so that the hardening crust is dragged forward, forming waves, ripples, currents, and whirlpools. Eventually, the crust becomes too thick and hard to be pulled, even by the hot lava flowing beneath it. When the fluid is shut off at its source, the already released hot lava continues flowing through its tunnel, leaving the pipe empty. The "Great River of Glass," after borrowing the San Jose's channel for a stretch, left it and, depleted, became a small lava pool in a meadow.

Ever since the San Jose returned to its course to run in places through such lava tunnels it has, in flood-time and loaded with debris, gnawed at them and unroofed some of them.

El Tintero must have resembled a Maypole when its fiery ribbons were rippling down its sides. These made, and abandoned, deep tunnels whose roofs have collapsed in sections, leaving open, lava-walled pits or trenches, one of them 75 feet deep from its roofless eaves. Only winged creatures are safe in that death trap paved with fragments of lava roofing. Geologists are gently lowered into it by derricks.

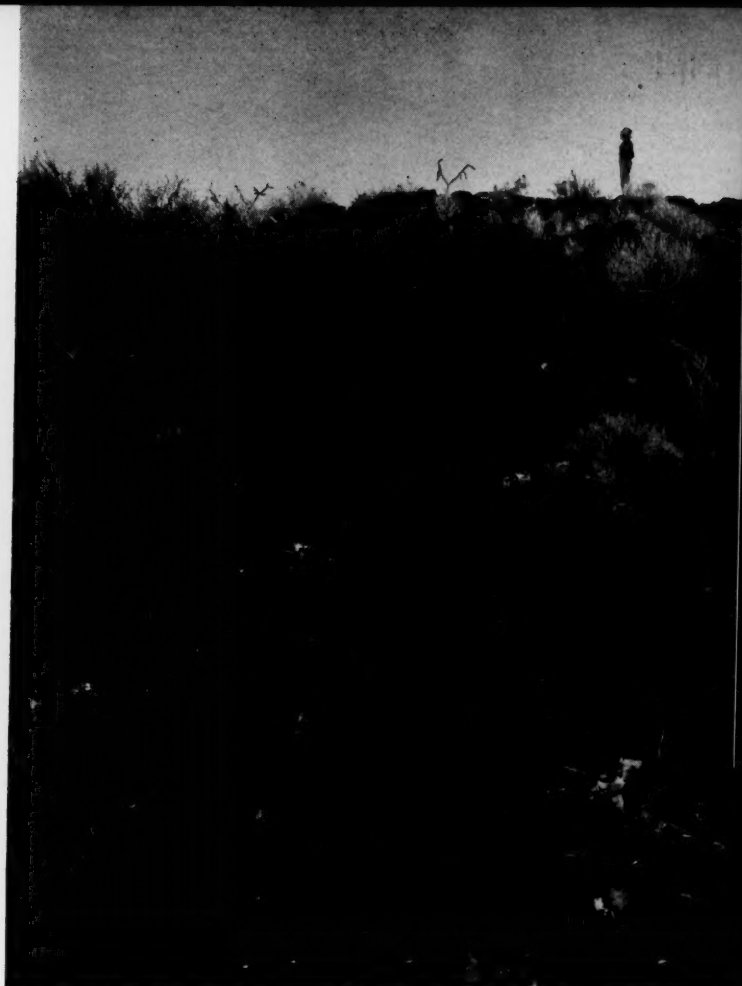
Splitting into three streams at one place, the great lava river made two islands which are now sunken parks with grass and trees enclosed by lava walls about 20 feet high. The larger park of 30,000 acres is entered by a safe gravel trail across the surrounding lava.

Roads across New Mexico's frozen rivers need no bridges. The lava suffices, but must be well padded. The few roads crossing the 57-miler are at narrows, and other places where traffic required safe passage over the lava.

In other places the lava river widens into lakes, where frozen ripples and waves have whitecaps of reflected sunshine. Another glitter, of sand, shows where drifts have invaded the lava lakes. Some are now fertile enough for nature's dry farming — wiry, drought-enduring weeds, grass, mesquite, and others taking hold. But no kingfisher watches for his finny dinner. No hawk expects to find anything worth the hovering, soaring, circling. There are no midges to entice dragonflies to knit the air with hungry stitches. A butterfly may venture out on the lake for come-by-chance honey. Or a deer seeking safety from hunter or coyote may rush upon it, to perish miserably, its hooves and legs slashed by the sharp edges of lava ripples, waves, and blisters they've crushed so that it bleeds — or starves — to death.

Such a lake in the "Great River of Glass," one about four miles long and wide, once trapped a band of horse thieves and their stolen herd. To escape the Gallup sheriff and posse, the mounted rustlers started the animals (one a thoroughbred) across the lava lake. The wise sheriff left some of his men on that side

of the lake to collect any of the thieves who turned back. He and the rest of the posse crossed the river via one of the safe roads and lined up along the far side of the lake. Results: when the thieves straggled "ashore" on either side, their boots were gone, the coats they'd tied around their bleeding feet were rags.



▲ The man at the top of the ridge can see more of the stream that produced this lava cataract about a thousand years ago, its frozen ripples still remaining on each side of the weathered crack.

◀ Cacti and other plants have taken hold in the lava cracks, to speed the process of reducing the volcanic rock to tillable soil. Scenes near Carrizozo, New Mexico.



Stairway to a deep freeze—
Going down to the Perpetual Ice
Caves, near Grants, N.M.

They welcomed hospitalization in jail. The horses, mown down in lines and clusters about midlake, became vulture food.

Many lava zone valleys, slopes, and mesa tops are adorned by frozen rivers, their lava stretches exposed or buried under sand dunes. Remnants of mesas are the isolated pillars, columns, and needles, wearing lava mortarboards. These "graduates" are native sandstone orphaned from their parent plateaus and cliff walls by erosion, still capped by the overlying lava, which on many high mesas is 10 to 50 feet deep. Such are the celebrated outlyers of Acoma Pueblo's mother mesa, a dozen pillars resembling a line of elephants perched on kegs.*

Would you expect to find natural refrigerators in the Sunshine State? It has them, in certain lava caves with the proper conditions for making and keeping ice. The Perpetual Ice Caves — in the almost perpetual sunshine — are about 27 miles west of Grants, near the western flange of the Lava Beds. They were built by the main flow from 8,300-foot Cerro de la Bandera. The fiery lava serpent slid down the slope for a thousand feet, built the Caves, then went on to rest in the Lava Beds.

*Cf. Mrs. William T. Sedgwick, *Acoma, the Sky City* (Cambridge, 1926): "Most extraordinary is the line of heads and trunks of eleven colossal elephants that may be seen two miles away from Acoma toward its farm-lands" (p. 5).—Ed.

Leaving my car to inspect the largest of the scattered Perpetual Ice Caves, I obeyed the posted advice: WEAR STOUT SHOES WHEN WALKING OVER LAVA — I had no desire to become hoofless. The path to the cave ends at the top of steep wooden stairs with a landing about midway for resting. There, while sunshine pounded through my hat, cold air from below fingered my ankles. The stairs descended to the level floor of a rock-walled foyer, the protruding lower lip of the wide-gaping cave mouth. Crossing this shady vestibule, I entered the roomy refrigerator whose rear wall glistened like teeth.

This ice counter averages 14 feet in height, meets the rear cave wall about 50 feet back from its face, and is fully 100 feet long. No one knows how deep the ice bench is below the visible part of the cavern floor, nor where ice-water — if any — drains away. Clear, aquamarine blue ice alternates with dark horizontal bands.

Lava rock, like asbestos, is a good insulator. In some forms, as pumice, it is highly porous. Water can find chinks between rocks, or make them in solid rock. And perpetual ice in cavities is certainly frozen seepage water, clear or dust-laden, permanent or impermanent. Under its igloo-shaped roof, this huge icebox collects, impounds, and freezes an amazing amount of seepage for a land of little rain and much sunshine. Does a perpetual spring supply water for this ice factory which never closes even in the long, hot, dry summers? Here is E. R. Harrington's logical opinion:

Until quite recently, the forming and "keeping" of the ice in such lava caves as this near Grants, New Mexico, was considered a mystery. Not long ago, however, a scientific explanation was published (see text, page 15).


The basaltic formation offers perfect drainage for melting snow. . . . The greatest amount of ice forms in spring when snow is melting. [Yes, New Mexico has high altitude snows that attain considerable depth, so Cerro de la Bandera's cone may funnel some snow water through hollow or clogged lava tunnels down to the group of Perpetual Ice Caves.] The slant of the sun, temperature, formation of the cave, etc., result in free circulation of air in winter, freezing seepage, and drawing the cave full of very cold air. In summer, changed conditions result in practically no circulation of air. Cold air in the cave tends to remain there, and what few eddy currents of warm air enter are chilled to the freezing point. Hence the perpetual ice.*

And that's that. The cave's temperature convinced me that seepage of any sort would freeze there regardless of the hottest weather outside. There was

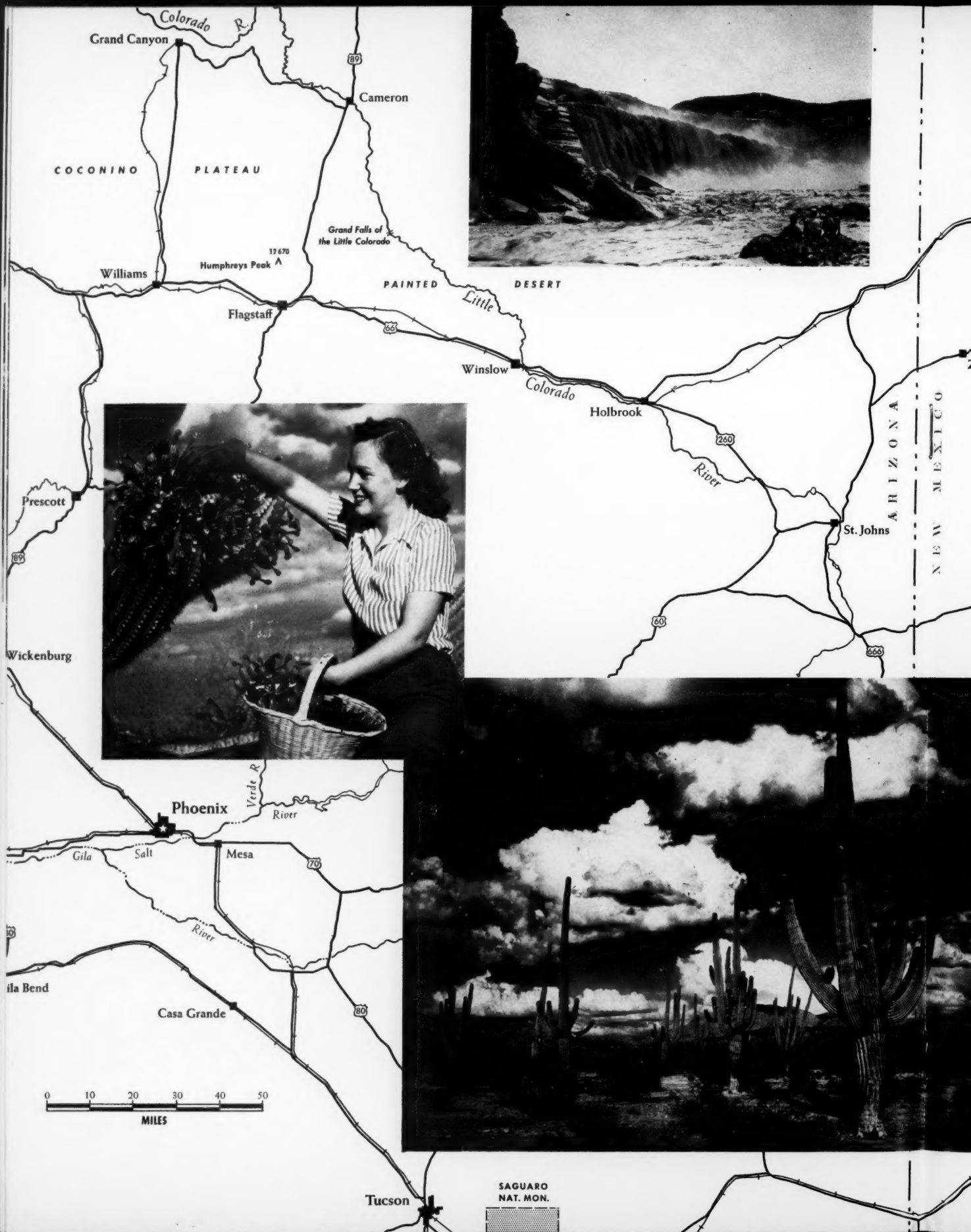
*The source of this excerpt does not appear in our author's notes; however, in the *Journal of Geography*, vol. 42, no. 4, 1934, pp. 433-6, E. R. Harrington describes the same phenomenon in similar terms for another area.—Ed.

no perceptible inhalation of warm air through the cave's large mouth. I was soon shivering, so I secured a chance sliver of clear blue ice to combat the heat on the way back to my car.

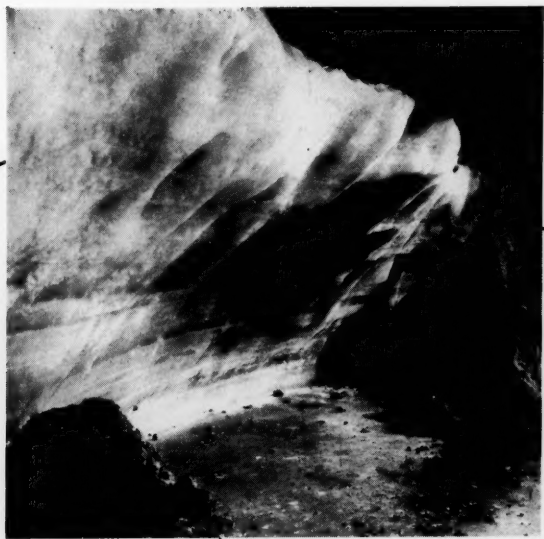
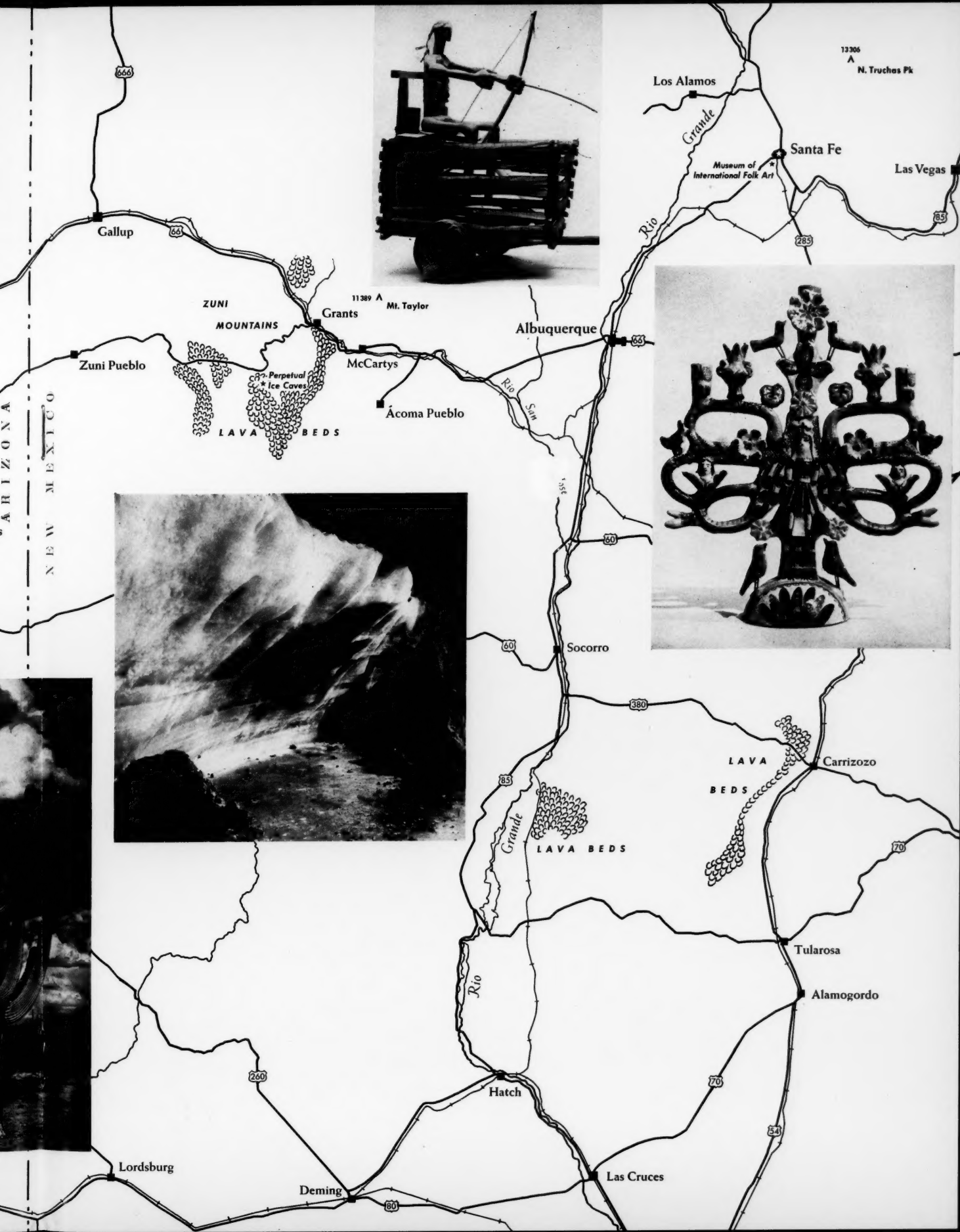
Early ranchers and other pioneers patronized Perpetual Ice Caves for the only ice to be had. Even the wagonloads they removed were promptly replenished. Those times, they did not bother about the whys and wherefores of constant, valuable ice in lava blisters. Neither did the Indians. They doubtless patronized those refreshment counters in passing on hot summer days, but I've found no Indian legends about them.

But the Navajos have dramatized the Year of Fire. It was a battle between the Twin Gods of War and some terrible monsters. The Gods used fiery mountains with destructive results. The slain monsters' blood flowed in hot red torrents, to congeal in reddish-black stone. Their bones were flung high and fell broadcast to become tumbled rocks and boulders. Thus are explained some of the freakish effects of the Year of Fire, which after a thousand years intrigue geologists and amaze tourists. 





ARIZONA
NEW MEXICO



THE LITTLE COLORADO RUNS DRY

Philip Ferry

WHEN CORONADO set eyes on the Little Colorado River in 1540, he found that stream a tumultuous torrent; Father Garcés saw the same stream in 1776 and compared it favorably with the main Colorado. American explorers were so impressed with the stream that in the middle of the 19th century Captain Lorenzo Sitgreaves of the U. S. Army set out to learn whether it was navigable to the sea. All these explorers were describing the river with utmost fidelity. Each saw it in the season of high water; had they seen at any time during the dry season, its flow would hardly have impressed them.

The visitor of today will be even less enthusiastic, for he is seeing the river in its declining years. Whether he sees a river at all depends on the season. During the time of rain or of spring run-off of snow-melt, he would see a stream as impressive as the main Colorado, with immense floods often swelling it. Throughout the rest of the year one can walk dry-shod across the stream bottom. The Little Colorado does not disappear simultaneously along its entire length. The stream is 170 miles long and at some sections pools remain through the summer. In the past some water flowed the year round. With the growth of population and the advent of irrigation, so much of the water is being taken out near its headwaters that at some

seasons the flow ceases altogether. Mormon pioneers were the first to use the stream for irrigation and several generations of Mormons carried on a battle with it. These pioneer farmers built a dam across the river in 1876. When this crude structure washed out in a flood, they built another. Altogether fourteen dams were built and carried away before the state of Arizona erected a flood-resistant structure in 1925. This dam impounds all the water that can be salvaged for irrigation, with the result that today the stream carries less water than it does history. River-gaugers compute that when the river does flow it carries away 27,500 acre-feet of silt each year — topsoil stripped from Hopi and Navajo farmlands by wind and erosion. So great is this burden of silt that Uncle Sam is planning a special silt-containing dam at Cameron, close by where the Little Colorado joins the main Colorado.

All the renowned explorers of the Big Colorado saw the Little Colorado. A generation after Columbus, Spanish adventurers and missionaries were exploring the Colorado River watershed. Some reached its junction with the Little Colorado — to this day one of the most isolated spots in the United States. In the 400 years since its discovery by white men, the Little Colorado has borne many names. In Coronado's day it was



Little Colorado River, Arizona, below Tolchaco Crossing, a few miles upstream from Grand Falls. (Harry C. James)

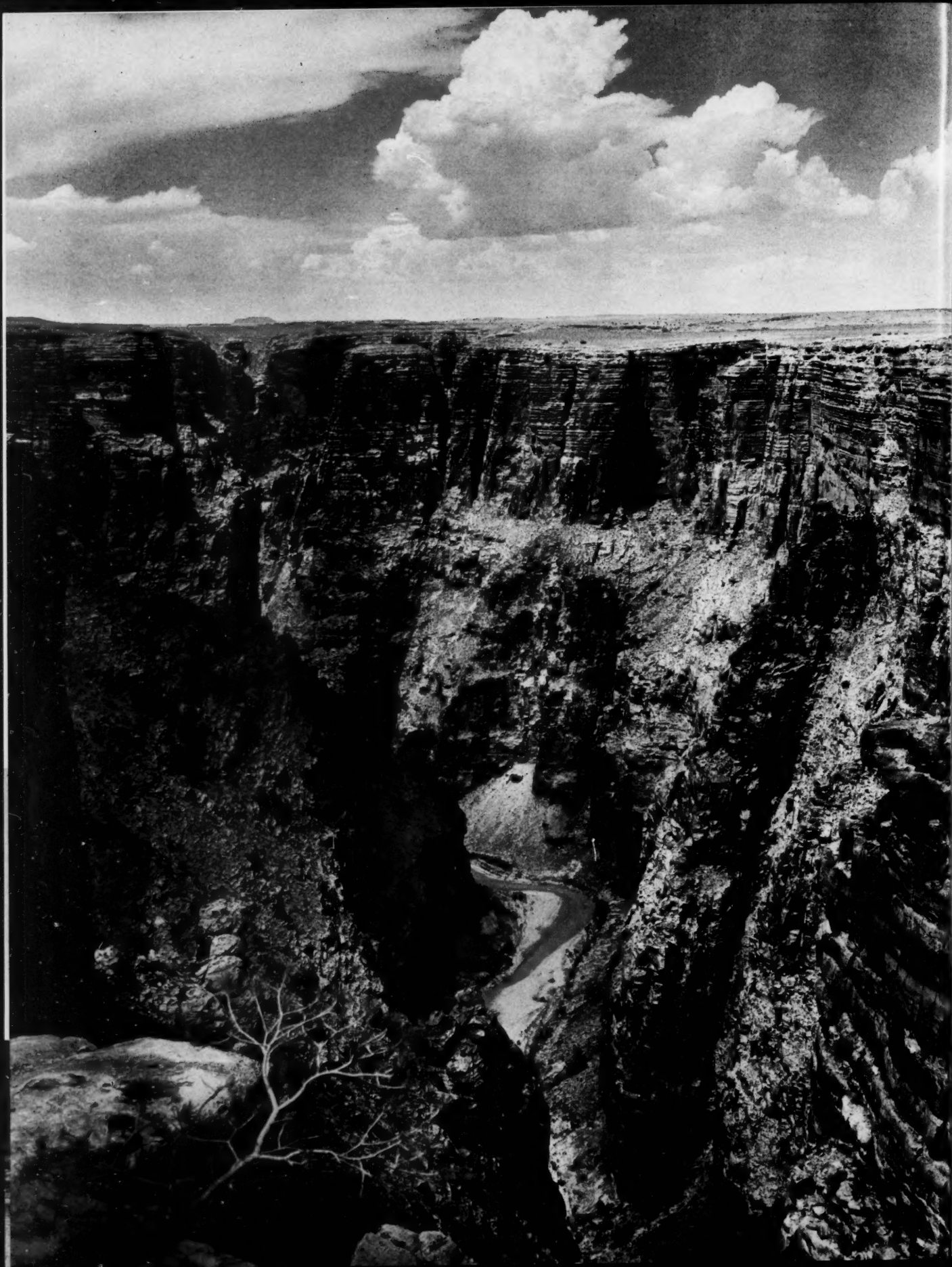


known as Río de Lina (Flax River). The Ives Expedition of 1861 used this name. Garcés called it Colorado Chiquito, the Little Colorado as we know it today; Oñate in 1604 called it Río Colorado. The Navajo knew it as Tol-Chaco (Red Stream), while the Havasupai still speak of it as the Salt River for the reason that their Hopi neighbors obtained salt from a ledge located eight miles from its junction with the Big Colorado. This Salt Spring, on the old Hopi Salt Trail, is a landmark of considerable local historic interest.

The name *Colorado* is from the Spanish and means reddish. Early American trappers called the Big Colorado the Red River of the West,, and the Red River of California. The Little Colorado, when it carries a considerable volume of water, is

tinted a dull red by the soil through which it flows. Carrizo Creek, Clear Creek, and the Zuni River add their pigmented waters to the stream. Cottonwood, Moenkopi and Oraibi washes, and a half dozen others, carry silt into it during the season of rain; at other seasons, these same washes are dry as the Sahara. The Little Red flows entirely within Arizona, originating at the eastern margin of the state and ending its career at the Big Colorado, near the north center. It rises in the White Mountains, issuing as a clear mountain brook in contrast to the swirling muddy river it becomes downstream, and drains a large part of eastern and northern Arizona. Flowing west through the Apache Reservation, it crosses U. S. 66 near Holbrook. Continuing on a northwesterly course, it

Rift in the Painted Desert, northern Arizona. The Little Colorado, like its big brother, has made a savage cut in the highly colored sedimentary formations of this high plateau region. The Painted Cliffs beyond are deep in Navajo and Hopi country. (Josef Muench)



T
n
t
o
t
E
g
p
n

skirts the ancient ruins of Wupatki National Monument, then runs diagonally across the great Navajo Reservation and actually parallels the Big Colorado for some 15 or 20 miles. West of Cameron it enters a deep gorge which in turn empties into the Grand Canyon where the two Colorados merge at Cape Solitude, at which point the Grand Canyon gorge is nearly 4,000 feet deep.

The actual confluence of the two rivers takes place within Grand Canyon National Park. The gorge called the Grand Canyon (the longest through which the Colorado flows) begins at this point and terminates at Grand Wash, two hundred miles downstream. In bisecting the southerly flowing Colorado River, the canyon of the Little Colorado separates the Colorado into the Grand Canyon below and Marble Canyon above, the latter some 65 miles long. Where the two rivers merge, the canyon of the Little Colorado is as rugged as that of the Big Colorado. Major Powell and his Colorado River expedition reached the mouth of the Colorado Chiquito in August 1869 and said of the canyon at this point that it was on a scale quite as grand as that of the main Colorado, although the river itself was small and ex-

Point on the South Rim, the walls of Marble Canyon are visible. At their head these walls are only 200 feet high but as they approach the Grand Canyon they rise to 3,500 feet.

No roads penetrate this section and the junction of the two streams can be viewed only from the river or from the air.

One can stop at point after point along the Grand Canyon-Cameron highway and walk to the brink of the gorge and look down at the turbulent stream. In this section the gorge is extremely narrow and sheer and cut through solid rock. Geologists point out the interesting fact that the canyon of the main Colorado is not the immediate watershed of its own banks. The country north and south of the canyon slopes away from the rim and presents the anomaly of a river which does not drain the country bordering upon its banks, except in an indirect way. The water flows south from the rim and drains into either Havasu Creek or the Little Colorado, streams which finally discharge their waters into the Colorado Grande.

Intermittent though its flow is, the Little Colorado manages at one point in its career to create a spectacle reminiscent of Niagara. This phenomenon occurs at what is grandiloquently called the Grand Falls of the Little Colorado River, a 185-foot drop created when an ancient lava flow poured into the river, damming the channel and diverting the northward-flowing stream in an easterly direction.

The lava outpouring originated in what has since been named Merriam Crater, a volcanic cone lying between the river and the San Francisco Peaks, those twin summits which dominate the Arizona skyline. When Merriam Crater erupted eons ago, it poured a deluge of lava into the Little Colorado. The intense heat of this incinerating ooze, whose track can be traced for twenty miles down the bed of the river, baked the limestone walls of the canyon a reddish hue. The flow blocked the river as effectively as a concrete dam, forcing the stream completely out of its bed. The river flowed around this lava tongue and in the course of its wanderings carved an entirely new channel for itself. This channel described a great horseshoe bend to the east where, as though drawn by a magnet, the fugitive river rejoined the old stream bed some 60 miles downstream. Had the runaway river continued on a direct course, it would have missed the old channel entirely. As it

The gorge of the Little Colorado River, near its junction with the Grand Canyon in the national park, would be famous in its own right if it were not overshadowed by the greatest chasm on earth so near it. But any idea that this is a tiny stream in a gully will be corrected by a glance at the picture of Grand Falls (page 20) many miles upstream from here. (Josef Muench)

ceedingly muddy and salt. George Wharton James said of it a half century later, "If one could follow the windings of the Little Colorado, he could see 60 miles of walled-in, boxed-up canyon, every mile of it grand, stupendous, overpowering." Viewing the country from Echo Reef, one sees a maze of hills, canyons, ravines and gulches. From Paiute



The "world's only dusty waterfall"—Grand Falls of the Little Colorado River, Arizona. Compare the view on the facing page, which is looking from the other side of the falls, and note some of the same rock formations (foreground here, background in the drawing). This photograph also appeared in *PD* for September-October 1951. (Harry C. James)

was, the Little Colorado is a stream that lost and found itself.

At the point where the river returned to its old bed, it found a break between the basalt outpouring (which had formed a terrace on the west bank) and the limestone and sandstone wall. At this spot it proceeded to excavate a secondary canyon and in doing so it created Grand Falls. For much of the year this is a dry terrace; in times of flood, it comes madly to life, the river pouring over the terrace in a churning, mud-colored flood and charging down the sandstone spillway as down a giant staircase. The cascade is 185 feet high and very broad, with a weight of water that sets up a roar and a wind which surges down the narrow gorge like the blast in a wind tunnel. At such times, a yellow mist fills the gorge, drying as it strikes the walls and leaving a hard coating of dust.

Early explorers who crossed the Little Colorado

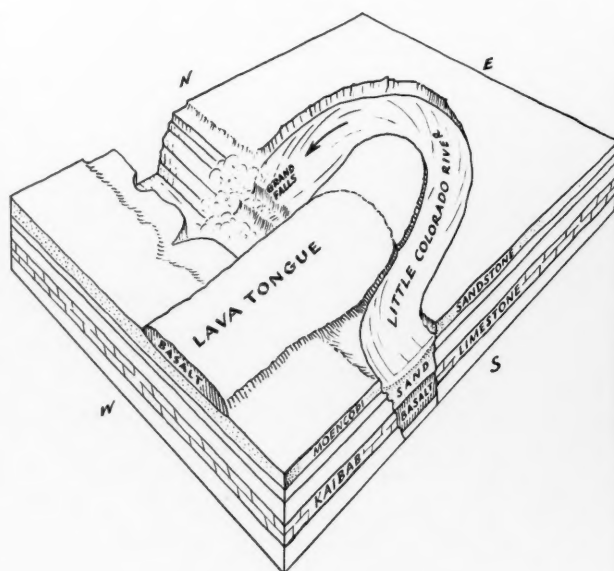



Diagram showing how a lava flow blocked the Little Colorado and forced the river out of its channel to cause the Grand Falls. (After Museum of Northern Arizona, Flagstaff)

missed the Grand Falls. Apparently, they forded the river miles above or below the cascade for they make no mention of it. Captain Sitgreaves was the first to describe it. In 1851, the U. S. War Department sent the Sitgreaves expedition into the area to pursue the Zuni River and the Little Colorado "to their junction with the Colorado," and the Colorado "to the Gulf of California." Sitgreaves abandoned this patently visionary project at the Grand Falls and set out overland for California. En route, the explorers cut north of the San Francisco Mountains, discovering Wupatki Ruin. The lithograph in Sitgreaves' report is the first published delineation of Grand Falls.

Apparently even primitive man did not visit the area to any extent. Dr. Harold S. Colton of the Museum of Northern Arizona at Flagstaff, points out that archeological remains are rather scarce near the falls. He describes a little cliff dwelling located in a deep box canyon 4.5 miles above this fall; and an interesting loop-holed fort in surprisingly good preservation some three miles below.

In May, June, and part of July, until the coming of the summer rains, the fall is dry and Navajo shepherds water their sheep in the deep pools be-

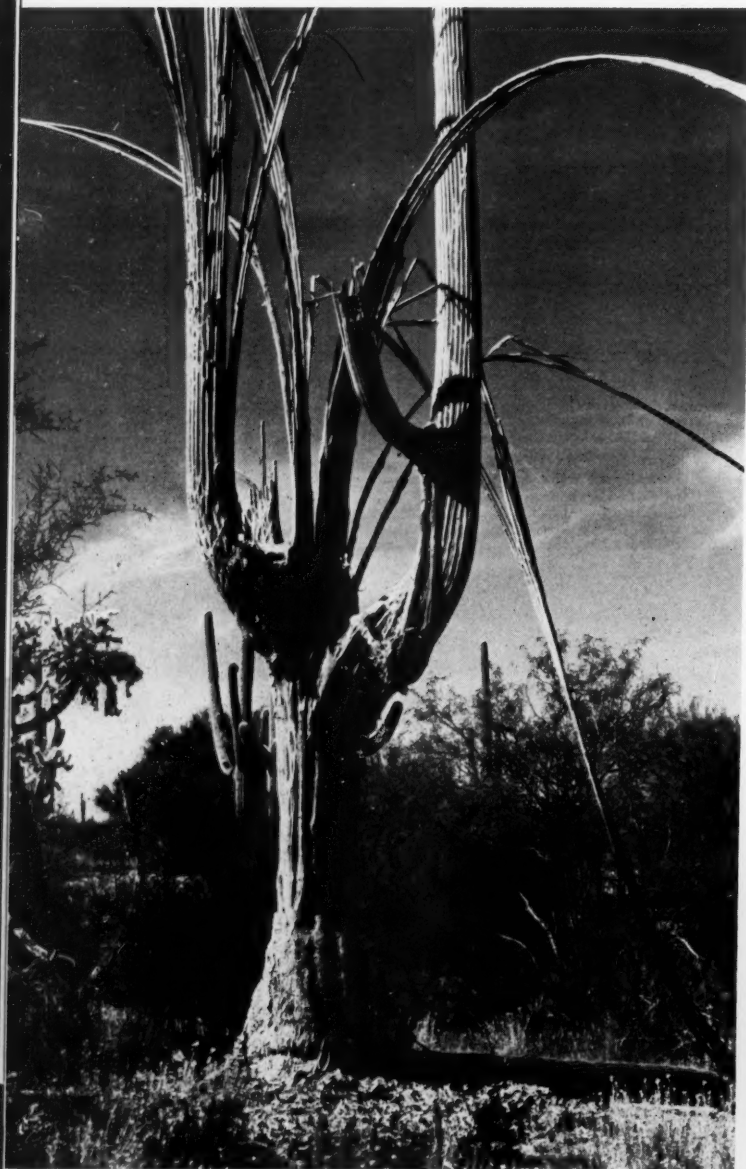
neath the cliff. After a heavy rain, the fall is at its best. Then is the time for a visit. Grand Falls is 45 miles northeast of Flagstaff. It is reached by leaving U. S. 66 at a point fifteen miles east of Flagstaff and driving northeastward 29 miles, then continuing north across the lava field to the brink of the gorge. This can be a lonely drive. This is Navajo country, in the vicinity of Leupp, a Navajo subagency, and the only wayfarer one is likely to meet is a wide-eyed shepherd boy, or a mounted man, or a velveteen-clad squaw — evidence one is in a section of our broad land where the white man is not supreme. Should the Grand Falls be in flood, one will witness a thrilling if short-lived spectacle, for in its grander moments the cascade is a tremendous sight. It is a foreshortened Niagara, being some twenty feet higher although much narrower than its more celebrated prototype, and would likely be world famous were it a permanent fixture. However, since the cascade functions as such only when the river is in flood, and since during the rest of the year it is a waterless canyon rather than a river bed, the Grand Falls of the Little Colorado River has just barely missed being celebrated among the world's cataracts. 



Cascade of the Little Colorado River, lithograph.
(From *Report of an Expedition Down the Zuni and Colorado Rivers*
by Captain L. Sitgreaves, Corps of Topographic Engineers. Washington, 1854)

WILLIAM A. BARDSLEY

Will Science Save the Saguaros?



▲ Once the skin of a saguaro has rotted away, the inner framework soon weakens and falls.

ONE OF THE MOST noteworthy residents of the American Southwest is currently fighting for its very life — fighting against the influences of modern civilization as well as an insidious disease-carrying insect. Victim of a destructive rot is the giant saguaro cactus, native of the Sonoran desert region, a plant which makes a major contribution to the distinct and noble aspect of its homeland — a land which itself stands as a memorial to the strength and variety of nature.

This desert home of the saguaro has outwardly been little affected by the coming of modern man. True, towns and highways, dams and reservoirs, farms and ranches dot the region. But they only dot it. Great stretches of the vast area present the same wilderness appearance to us as they did to Indians and Spaniards. Gone are a large part of America's great forests and grasslands. But most of our desert country, inhospitable as it usually has been to human habitation, remains largely in its natural state.

Even the desert, however, is not completely immune to the ravages of civilization. Certain members of its fantastic plant family are dwindling in number. Rugged as it must be to survive in its barren homeland, desert plant life is so delicately adapted to its environment that any slight variation therein is apt to threaten its existence. The saguaro cactus evidently has been affected by such a change.

Near the turn of the century, people venturing upon the desert occasionally noticed the forty-foot saguaros rotting away. No extensive study was made of the con-



dition, and for many years it was generally assumed that the rot was only a symptom of old age. About 1940, however, a notable increase in the number of dying saguaros was observed. Many strong, healthy cacti were being attacked. Some overcame the rot with a cork-like scab substance. But many, within a few weeks, fell in a dead heap on the ground.

At the same time it was noted that there were virtually no young saguaros in some areas. Disease and lack of young plants made obvious the problems of future existence for the huge cactus, especially with its normal growth area limited to southern Arizona, northern Sonora and a small part of the southern California desert.

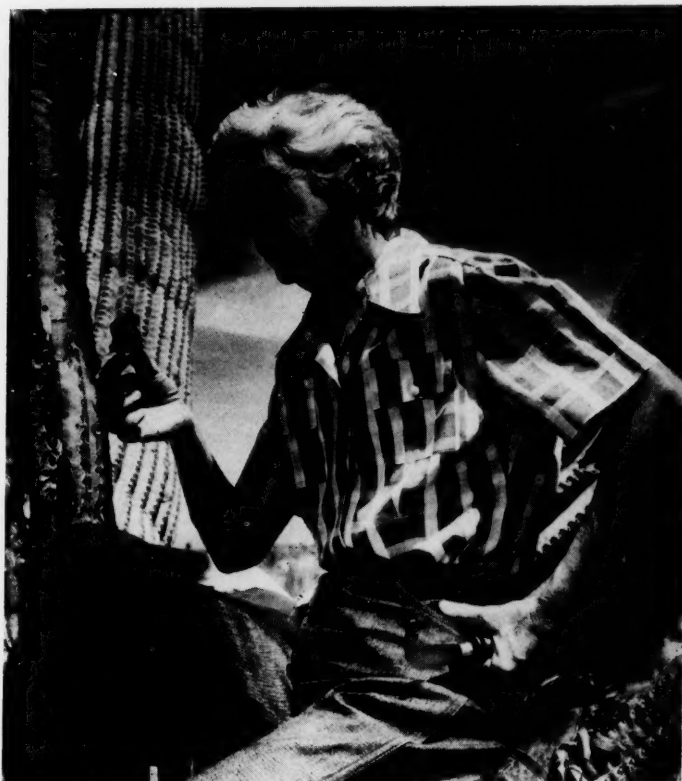
Perhaps the saguaro's difficulties can be traced to the coming of the white man to the desert, perhaps not. This will be discussed as the story proceeds. It is the good fortune of the cactus, regardless of the source of its trouble, to be facing the crisis in a generation in which our society has come to recognize a certain responsibility for preserving those plants and animals found upon the land on which man too must survive. As soon as the danger to the saguaro was realized, experiments were started to find both the cause of the rot and a way to eradicate it.

Today the cause is known. But the rot has not been controlled on a large scale. Nevertheless, the work goes on. Chances of the saguaro suffering the fate of the American chestnut tree or the passenger pigeon are remote. The facts that it grows in a rugged land and that man has found no way to make a profit by consuming it undoubtedly aid the cactus in its struggle for survival. Also helpful is its attractive spring bloom, which Arizona adopted as state flower, thereby drawing much attention to the plant.

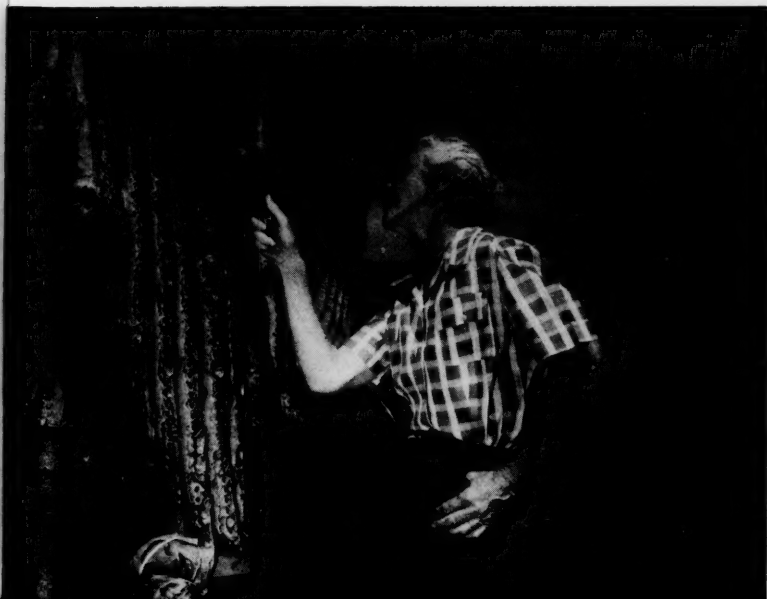
The first experiments to control the rot were made at the University of Arizona. The late Dr. James G. Brown and Dr. Alice M. Boyle of the plant pathology department began work during World War II. They applied home-made penicillin, developed by Dr. Brown, directly to the area of infection on the plant and discovered that it effected a cure. This was an im-

portant step forward. But the labor and expense of examining and treating all saguaros in an area of many thousand square miles — even with Dr. Brown's penicillin costing only a few cents a gallon — would be far too great to utilize this method to destroy the rot.

Photos by WESTERN WAYS FEATURES



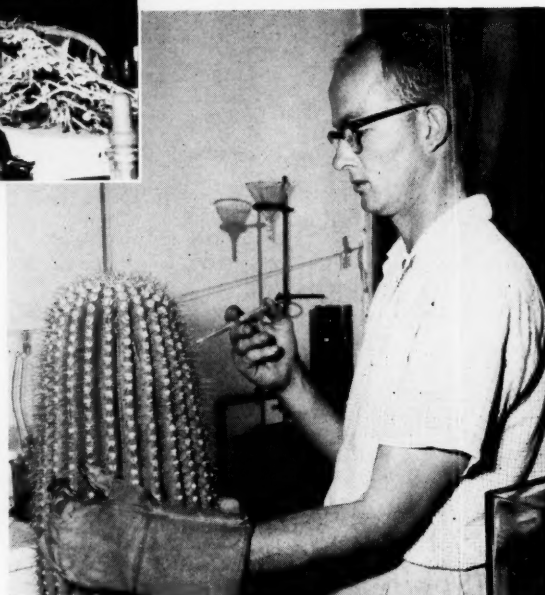
Dr. Alice M. Boyle of the University of Arizona pouring an antibiotic solution (streptomycin and terramycin) into a tube from which it will seep into an infected saguaro (LEFT, FACING PAGE); probing into a place where rot has started (LEFT); and examining a piece of rotted skin (ABOVE).





Dr. Boyle works with a graduate student in her laboratory at the University of Arizona.

▼ Dr. Stanley Alcorn, Department of Agriculture plant pathologist, injects bacteria into a saguaro section in the course of an antibiotic experiment.



Work was necessary to determine the carrier agent of the disease. The university experiments isolated the organisms causing the damage. Tiny bacteria, which were named *Erwinia carnegiana*, worked like vegetable soft rot and destroyed the cells in the tissue of the cactus.

The next problem was to learn how the bacteria moved from one plant to another. It was Dr. Brown's theory that they were carried by a previously unknown fly-like insect which laid its eggs on the saguaro's outer skin. Bacteria carried by the mother insect were believed to be present in the eggs and larvae. After the larvae hatched, they crawled on the surface of the cactus until they found a broken place in the tough skin. Here they entered to feed on the interior pulp and at the same time, spread the rot-producing bacteria.

While the laboratory experiments were in progress, field work was carried on in Saguaro National Monument near Tucson. The monument is an area of about 100 square miles in the midst of one of the thickest known saguaro forests. It was set aside in 1933. With its interest thus established in the preservation of the plant, the Federal government, in 1941, appropriated \$10,000 for investigation of the disease.

Most of this money was applied to work in a one square mile control area, containing an estimated 13,000 saguaros, within the monument. Each cactus was examined and a case history kept for it. In half the plot this was all that was done. In the other half, the 6 or 7 per cent found infected were removed,

fumigated, and buried. This experiment was made to determine in part if the rot spread only from one diseased plant to others in the immediate vicinity. Results showed that the disease could not be controlled by eliminating affected plants in a particular area. Later infection in the 320 acres from which the diseased cacti had been removed was about the same as that in the 320 acres where they remained.

The next big step forward in the battle against the saguaro rot came when Dr. Boyle, in doing research for her doctoral thesis, positively determined that a bacteria carrier was a moth, known as *Cactobrosis fernaldialis*. The steps in transmitting the bacteria were the same as with the previously blamed fly-like insect, an important distinction, however, being that

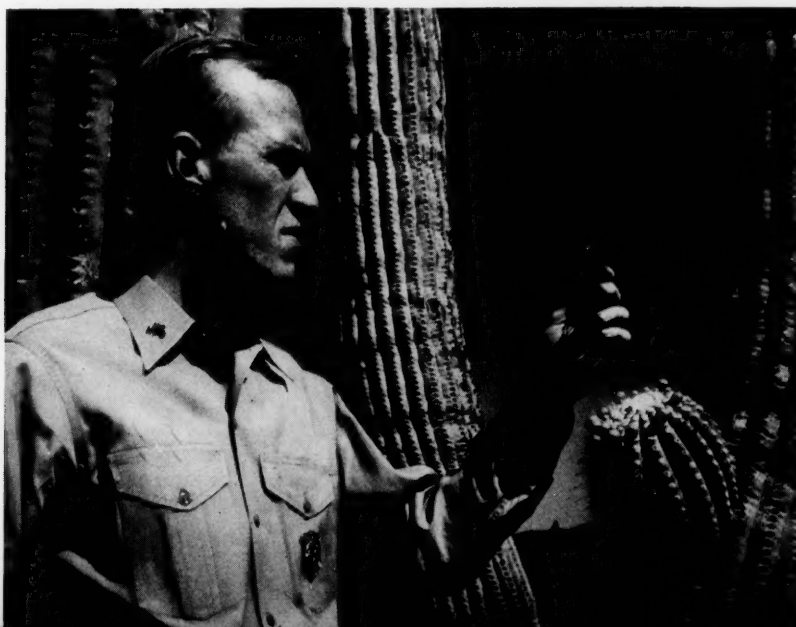
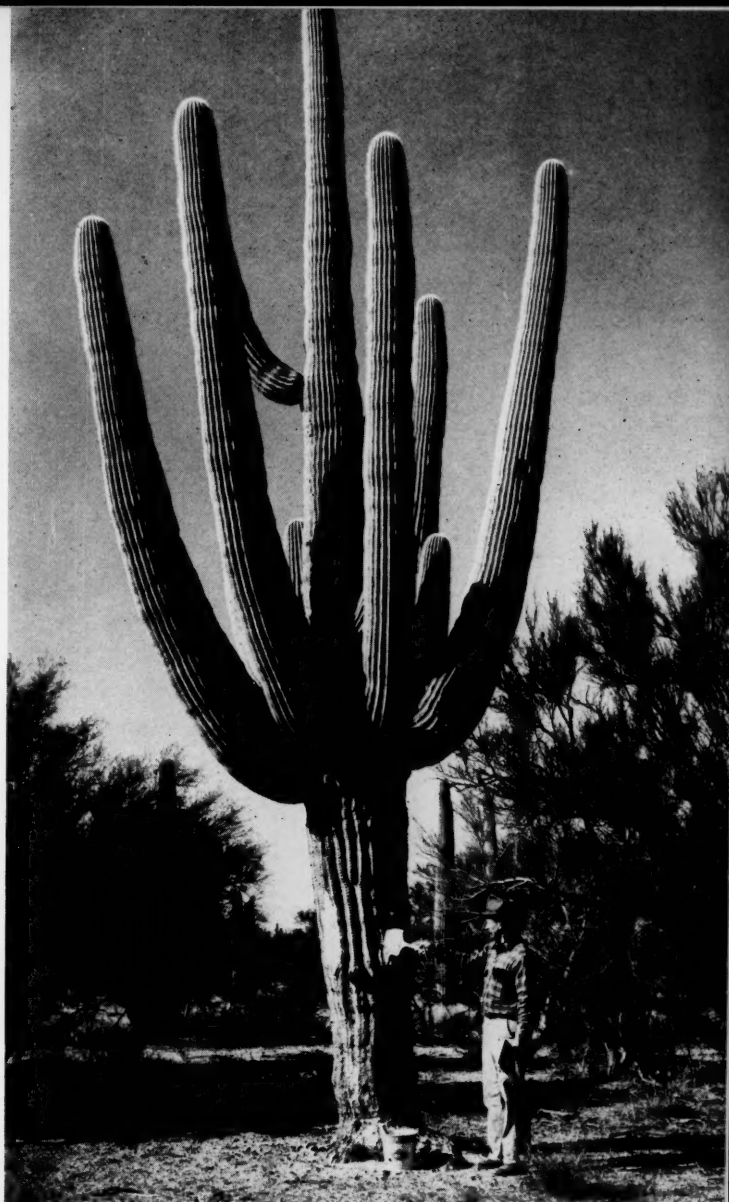
the moths' larvae had the ability to bore through the skin of the saguaro and make tunnels through the interior.

This discovery relieved the human race of a certain amount of apparent guilt. Earlier, it was believed that bacteria carriers could enter the saguaro only through damaged skin. People using the plants for rifle or stone-throwing practice or burning off the protective spines, which flame up in a blaze of glory when ignited, thereby allowing animals to feed on the base of the cactus, had been blamed for the infection. Woodpeckers and other birds and animals also got their share of the blame. Now it was shown that the bacteria could enter the saguaro without aid of man or beast — although exterior damage no doubt made penetration easier.

Dr. Boyle experimented with parathion to combat the carrier moth. She found that saguaros dusted with this insecticide failed to contract the disease. Aeronautical regulations, however, prevented the use of insecticides in general spraying by plane, so the problem of reaching all the saguaros in a vast area remained to be solved.

The work of Dr. Boyle did make it possible to calm the fears of those frantic Arizona residents who saw their decorative front yard saguaros collapsing from rot. Treatment and cure of a single cactus or a small group became possible. Across the wide desert, though, thousands of the green giants continued to topple to a silent death each year.

Many long hours of further labor and study were devoted to the problem. Several pathologists in the Ornamental Plant Section of the U. S. Department of Agriculture have been in Tucson since the end of World War II, working in cooperation with the University of Arizona. An important phase of their work has been an effort to determine whether other species of cacti than the saguaro harbor the disease and whether the carrier bacteria survive in soil. Growth habits of young saguaros have also been studied.



▲ A 1941 Federal grant of ten thousand dollars made possible an isolation experiment in a mile-square plot in Saguaro National Monument, southern Arizona. Diseased saguaros in half the plot were marked, hauled down, fumigated, and buried. Later, incidence of the disease was compared with that in the other half of the plot where rotting cacti were left standing.



Roping a saguaro to haul it down in the Saguaro National Monument experimental plot.
The giant limbs will be sawn in chunks and trucked to a fumigation and burial site.

Plant pathologist Dr. Stanley Alcorn is currently extending the Department of Agriculture studies on the saguaro, dividing his time between the search for a cure and experiments to learn more about the growth of young saguaros.

One problem is to find a material which can be injected into the saguaro to bring about cure and, if possible, prevention of the rot. The material sought must have a double quality — aside, of course, from ability to destroy the bacteria on contact. From the point of injection it must spread throughout the entire cactus and, moreover, it must retain its effectiveness for a considerable length of time. Dr. Alcorn, in laboratory culture tests, confirmed Dr. Boyle's work with penicillin and streptomycin. He says that other common anti-biotics, such as chloromycetin and the tetracycline group, also show promise in culture. But experiments in the treatment of the saguaro itself have not been completed.

Filled with potted young cacti, Dr. Alcorn's office-laboratory at the University of Arizona would be the envy of any city dweller with a green thumb who grows cacti as a hobby. This display, however, represents only part of the work with baby plants, most of which is carried on in the university greenhouse. Tender green shoots of newly germinated saguaros and the miniature forms of one- and two-year-olds are carefully observed in the growth process under various controlled light and heat conditions. Later these young cacti will be transplanted outdoors, where some will be provided with water and fertilizers and others left to seek their own nourishment.

From the limited area of its natural growth, it is logical to assume that the saguaro can exist only under certain rather particular climatic and geographic conditions. Part of the objective of the present experiments is to determine if some slight change therein could be responsible for the dearth of younger generation saguaros.

It is with the young plants that modern man's arrival on the Southwestern scene may have had the most effect on saguaro population. Livestock turned loose upon the desert tramples hundred of young plants into oblivion. In a land where the achievement of life by any plant is a noteworthy accomplishment and cacti several years old are only inches high, this can destroy a large percentage of young saguaros.

A more remote but equally logical theory has been advanced to suggest that man has upset the balance of nature on the Southwest desert. Nearly any cowboy, prospector, hunter, or tourist kills on sight every rattlesnake he sees — and quite a few harmless snakes as well. Through the year, this means fewer rattlesnakes, making the desert safer not only for those who kill snakes but also for rodents who serve as the main course in most snake meals. Therefore, as rattlesnakes

decrease, rodents increase. Rodents regularly feed on the seeds and young plants of the various cacti. More rodents means fewer cacti. Other predators on rodents, such as hawks, owls and coyotes, have also grown scarcer because of man's activity.

If these theories are correct — and it seems hard to refute them — man certainly has a responsibility to devote a little of his skill and wealth to the preservation of the saguaro, a noble plant toward the destruction of which he may have been contributing for many decades.

Superintendent John Lewis of Saguaro National Monument is very optimistic about the saguaro's future — more so than many other observers. He feels the white man's coming has not been good for the cactus because of the delicate environmental adjustment it requires. Nevertheless, he believes the disease destroys only the older plants and observes that millions of saguaros still survive on the vast reaches of the Sonoran desert. Mr. Lewis sees no danger of extinction, especially with large areas now set aside in which the saguaro and its surroundings are protected.

For years, indeed for centuries, Western civilization's objective was to conquer the natural world and from it gain material wealth. The American red man, a victim of this philosophy, believed his view of life was superior to that of the white man. He endeavored to live within the bounds of nature, not to destroy them. Perhaps, efforts to preserve the saguaro cactus, along with other conservation work, represent our society's growing realization that the Indian knew a great truth. The globe is the place in which we have to live, not a round section of earth we were given to subdue.



A Papago woman harvests saguaro fruit as Indians of the Southwest have done for many centuries.

New Mexico: centuries of poco tiempo

NEW MEXICO — the upper valleys of the Rio Grande — is still very much an enclave of Old Mexico, still Pueblo Indian country, still to be written about. The shelf at hand yields just a few samples: there is the seemingly imperishable — at least far from dated — classic of Charles F. Lummis, *The Land of Poco Tiempo*, which *The University of New Mexico Press* reissued in 1952, 59 years after the first Scribner's edition; of two by Erna Fergusson, the Albuquerque (Merle Armitage Editions, 1947) is being handled by *The Caxton Printers, Ltd.*, of Caldwell, Idaho, and New Mexico: *A Pageant of Three Peoples* (Knopf, 1951) stays in print to meet the demand for such a book as only the Albuquerque-born Erna Fergusson could have provided; and there is a collector's item in the *Harvard University Press* 1926 first edition of Mrs. William T. (Mary Katrine) Sedgwick's *Acoma, the Sky City: A Study in Pueblo-Indian History and Civilization*. This is a book that well deserves to be reissued. In 1806 the U. S. exploring party of Lt. Zebulon M. Pike got itself picked up by Mexicans on the Rio Grande — it may have been "accidentally on purpose" — and taken to Santa Fe as trespassers. The event, plus hunger for trade goods in that remote provincial capital (and American hunger for profits), laid the train for contact which was to increase to the extent that 20 years later the U. S. sent out a commission to survey The Road to Santa Fe. This is the title under which the historian-editor Kate L. Gregg presents "The journals and diaries of George Champlin Sibley and others pertaining to the surveying and marking of a road from the Missouri frontier to the settlement of New Mexico 1825-1827" (*The University of New Mexico Press*, 1952). Prime source material, "lost" for 100 years.

Now the author of the Pulitzer and Bancroft prize-winning *Great River: The Rio Grande in North American History* (see review, PD, July-August 1955) has returned for a closer, longer — one could say a deeply loving — look at Santa Fe, three-and-a-half centuries-old city which historically and in our time culturally has earned the rank of regional "capital" of the old Southwest:

The Centuries of Santa Fe. By Paul Horgan. E. P. Dutton & Company, Inc., New York. 1956.-xiii + 363 pp., end-paper map. \$5.00.

Santa Fe was born in 1610 and lived two centuries and a decade under Spain's royal banner, spent a quarter century under the Mexican flag, and has been now for a decade and a century under the Stars and Stripes (including its brief spell under the Stars and Bars). Paul Horgan's chronicle of these centuries is kept running through the lives of a royal notary, a father president, a bannerman, an alderman, a matriarch (Book One: Under Spain); a Missouri trader (Book Two: Under Mexico); a U. S. lieutenant, a German bride, a doctor of medicine, a chronicler (Book Three: Under the United States). Nameless, these are real persons in composite; types, they live — here is Horgan the novelist — and let the reader identify with them as their author intended. (The "chronicler" of modern days, from his earliest impressions in 1915 to the boom after Los Alamos, is eye and ear only — Paul Horgan's, of course.) Such is his device and frame; with it and within it he builds a solidly truthful picture which, in texture and color, invites the reader to complete enjoyment.

The events in the life of this oldest capital city in the nation are as stirring, the captains, governors, priests and prelates who lived and ordered them are as worthy of our interest and many of them of our respect as any in our country's history. Two observations come to mind: why

is taught history so "thirteen colonies" slanted? — why is not Juan de Oñate as well known in the land he helped colonize as John Smith? Captain-General Diego de Vargas, as Governor William Bradford? Jean Baptiste Lamy, as Roger Williams? And: why is not more history served up — especially to our youth — in the Horgan style? Isn't it the better understood the more fully we can enter into the everyday living, thinking, feeling of the people who made it? Isn't the living spirit more actual than the dead letter? This is not a plea for the historical novel. This book is in no sense a novel, any more than it is a recitation of dates and events. It is a reliving of the essential life of a place, in its context of space and time, an evoking of the flame from the ashes. And the warranty of truth is given in Paul Horgan's scholarship being of the same high order as his literary gifts. It is, in fact, of that highest order which can recreate the spirit from the compiled letter.

Arizona: on finding and losing mines

ARIZONA's landscapes form a dramatic stage and backdrop for a long and lusty, intense and colorful play of human history which provides an inexhaustible mine of material for writers. The word mine is used here advisedly. Along with cliff dwellers and Hopis, Navajos and Apaches, conquistadors and padres, mountain men and U. S. troopers, cattle kings and cowboys—not to mention the general run of solid settlers—prospectors and miners cast considerable shadow on Arizona sand and sage, rimrock and pine flat. "Lost Mines" take up a large space in Joseph Miller's journalistic compilation of *The Arizona Story* (Hastings House, 1952). The most notorious of them all is the subject of Sims Ely's *The Lost Dutchman Mine* — The Fabulous Story of the Seven-Decade Search for the Hidden Treasure in the Superstition Mountains of Arizona (William Morrow and Company, New York, 1953) — it needed a book to bring the strange story up to date, and one by a man who spent 25 years in the search and left it firmly believing the fabulous mine exists and will one day be found. Back of these stories is some earlier pioneering, led by one of the great men of the West:

Joseph Reddeford Walker and the Arizona Adventure. By Daniel Ellis Conner. Edited by Donald J. Berthrong and Odessa Davenport. University of Oklahoma Press, Norman. 1956. xxii + 364 pp., 8 halftones, map. \$5.00.

In 1818 there appeared on the Missouri frontier a big 20-year-old Tennessee lad who was destined to become one of the greatest of the mountain men, the exploring trappers who broke trail for westward expansion. Joseph Walker it was, and we find him in California in 1834, in the California-Santa Fe trade a few years later, and in 1843 leading the first wagon train overland from Salt Lake to California. He was with Frémont in 1844-5-6. In 1861 he organized a party to prospect in New Mexico and Arizona. The details of this adventure might have remained virtually unrecorded, but for the chance that a Kentuckian named Daniel Ellis Conner fell in with it in northern New Mexico — and Conner took notes, which he later expanded into a 1,000-page narrative. The editors of this first publication of the original text tell us: "This document is important because it gives the only known eye-witness account of the last years of Joe Walker's travels in the Far West before his death in Contra Costa County, California, on October 27, 1876 — a hitherto almost unknown portion of his life. [It] is also a contribution to our knowledge of the Southwest because it contains the only known authentic accounts of the death of Mangas Coloradas, of the Pinole Treaty, and of the opening of central Arizona's

mines. Finally, it offers in straightforward terms a slice of American exploration and travel in the West which is on a par with the most adventurous accounts we possess for the first two-thirds of the nineteenth century." Conner died in California in 1920.

The colorfully, often humorously detailed narration of this tough and determined — and masterfully led — Walker party's penetration of Apache country, over the Mogollon Rim, through Tucson to the Gila, up the Hassayampa out of the desert into the plateau country where they staked out claims, dug little gold, fought many Indians, founded Prescott and saw it become Arizona's territorial capital, makes grand reading for all who savor the salty inside story of rough-and-tumble frontier events.

Cross timbers, crossed-out towns, border crossers

Beyond the Cross Timbers: The Travels of Randolph B. Marcy, 1812-1887. By W. Eugene Hollon. University of Oklahoma Press, Norman. 1955. xiii + 270 pp. 11 halftones. \$4.00.

An associate professor of history at the University of Oklahoma, W. Eugene Hollon has made a signal contribution to the literature on the Southwest and Rocky Mountain region by giving due recognition to an explorer and topographer whom he ranks with John Wesley Powell — General Randolph B. Marcy. Leader of five Western expeditions, Captain Marcy (as he was during most of his years of frontier duty, of interest to us here) played a leading part in shaping the map of the territory taken from Mexico, through his important discoveries — filling in gaps left by other explorers — and his locating and naming of geographical features. The "Cross Timbers" refers to the chain of forts built from Arkansas to New Mexico at Marcy's instigation. Taking the whole — with its well drawn pictures of frontier life and travel climaxed by a harrowing winter march over the Rockies to New Mexico for supplies to relieve Fort Bridger, Wyoming, during the Mormon War, 1857-8; its glimpses of Civil War politics and military unpreparedness — Marcy became chief of staff (a post hitherto unknown in the small U. S. Army) to his son-in-law, General George B. McClellan; and its recurring themes of family life under trying conditions — Mary Mann Marcy was the finest type of army wife — it should be said that the historian-biographer of *The Lost Pathfinder: Zebulon Montgomery Pike* (Norman, 1949) has done a first-rate job of rediscovering for us another leading trailblazer in Randolph B. Marcy.

Ghosts of the Glory Trail: Intimate glimpses into the past and present of 275 Western Ghosttowns. By Nell Murbarger. Desert Magazine Press, Palm Desert, California. 1956. xi + 291 pp., 55 photos, 8 maps. \$5.75.

Mining country is ghosttown country. The miningest part of the West, to the early 1900's, and now the most haunted, is the Great Basin, the Intermountain Region between Utah's Wasatch range and California Sierra Nevada. Mostly it is the State of Nevada, where long troughs of sagebrush desert are divided by long, north-south trending ranges of mineral mountains. The great mining boom that hit this country after the California Gold Rush began to peter out gave birth to more than a thousand camps, hundreds of which grew to town or city size and as the strikes ran out, died. Nell Murbarger is a remarkable journalist who has appointed herself historiographer of the life and times of those erstwhile centers of pioneer population — a lonely but peculiarly rewarding task. The book that her zeal and devoted research have produced is a lively human

chronicle of a fabulous era, and the most complete guide in print for everyone interested in visiting for himself these ghosts of a very recent past.

Destiny and Glory. By Edward S. Wallace. Coward-McCann, Inc., New York. 1957. 320 pp., 9 halftones, endpaper map. \$5.00.

The mainstream of our history is fringed with fascinating side-eddies and whirlpools of events born of the flood but in themselves carrying only the flotsam of the almost-made or might-have-been. Among these are the exploits of some reckless, flamboyant American adventurers who shot their way into Cuba, Mexico, Nicaragua, Ecuador, and other south-of-the-border points a century ago. Typically they were young Southerners of Irish descent whose blood was still hot from the Mexican War. The last of them were followers of "Fighting Jo" Shelby on his amazing march into Mexico in support of Emperor Maximilian. The greatest of them all, of course, was the fanatical William Walker, who filibustered himself into the presidency of Nicaragua. Historian Edward S. Wallace has told their story in rousing style in *Destiny and Glory*. A subsequent printing would doubtless include a footnote on the spiritual great-grandsons, now in the news from Cuba, of Colonel O'Hara and his hairy lads of the Kentucky Battalion whose destiny was the early grave more than glory in that turbulent island just 100 years ago.

D.G.K.

Geography in fine print

World Economic Geography: With an Emphasis on Principles. By Earl B. Shaw. John Wiley & Sons, Inc., New York; Chapman & Hall, Ltd., London. 1955. vii + 582 pp., 339 text figs. in halftone and line. \$6.50.

A college textbook, designed to teach principles which should be part of the intellectual equipment of every well informed citizen. It is replete with examples and enlivened with a wealth of interesting detail. In this anything-but-dry text, even the footnotes are thoroughly readable!

Geography of the Northlands. Edited by George H. T. Kimble and Dorothy Good. American Geographical Society Special Publication No. 32. The American Geographical Society and John Wiley & Sons, Inc., New York; Chapman & Hall, Ltd., London. 1955. x + 534 pp., 47 text figs. in halftone and line, inset map. \$10.50.

Global geography often pictures the chief land masses as spokes of a wheel, its hub the North Pole. Arctic and subarctic were long the recent great focus of exploration; with air power they become politically significant; now they represent economic opportunity as the last great frontier of development. This textbook looks intensively at all the borderlands of the Arctic Sea from every viewpoint of natural and human history, to illuminate the importance of them and their resources, for now and especially for the world of tomorrow.

Geography of North America. By George J. Miller, Almon E. Parkins, Bert Hudgins. Third Edition. John Wiley & Sons, Inc., New York; Chapman & Hall, Ltd., London. 1954. xiii + 664 pp., 290 text figs. in halftone and line. \$7.50.

Another basic text, which considers the continent as a whole, then in detail its major political divisions: the United States and Alaska; Canada; Mexico and Middle America. For the informed citizen as well as the student of geography.

California and the Southwest. Edited by Clifford M. Zierer. John Wiley & Sons, Inc., New York. Chapman & Hall, Ltd., London. 1956. x + 376 pp., profusely illustrated with halftones, maps, charts. \$11.25.

"The first comprehensive regional study" of the California, Nevada, Arizona, and Utah area — physical geography, resources, settlement, cultural patterns, commerce — with 32 contributors, including several of PD's prominent authors. Valuable for a variety of users. The editor is professor of geography at the University of California at Los Angeles.

"The Worth of Wildness"

Dr. Robert C. Miller, Director
California Academy of Sciences
San Francisco, California

Dear Dr. Miller:

Again I wish to compliment the Academy of Sciences on the exceptionally fine quality of *Pacific Discovery*. It continues to be one of the finest publications in the whole field of natural science and conservation.

The last issue concerning "Amber" is a fascinating complete story of a European gem that most of us did not know had such importance over such a wide range of the Pacific.

We in the Sierra Club have particularly appreciated the prompt and well-written editorial on the values of wilderness. I have asked the editor to send a copy of that issue to George Marshall, who has the responsibility for completing the summaries of The Wilderness Conference.

The part played by the Academy in the success of the Conference was outstanding as usual, and is greatly appreciated.

Sincerely yours,

RICHARD M. LEONARD

Sierra Club, San Francisco, 16 April 1957.

EDITOR, *Pacific Discovery*:

I want to let you know how very much I appreciate what you said about Bob Marshall, and his book, *Arctic Wilderness*, and your using the picture of him on top of North Doonerak. The universally fine response which this book has received has been most gratifying in itself and also for what it indicates of a growing understanding of the continuing values of wilderness in the Brooks Range.

EASY CHAIR COMFORT**LONG RUGGED WEAR**

AMERICA'S FINEST OVERALL
Since 1850

Incidentally, news of what is going on in the Brooks Range in the destruction of wildlife and wilderness environment is most disheartening. I gather that thoughtless, wanton, and arrogant destruction by the military and those attached to it has been especially serious and threatens to be more so. However, I gather that, unless all interested in wilderness preservation find ways of speaking out against what is going on promptly, we may have little wilderness and wildlife, which is an essential part of what is left in Alaska.

In your March-April issue, I was also fascinated by the series on Amber and enjoyed the other articles as well. I especially enjoyed your splendid editorial, "The Worth of Wildness," which is an important contribution to this subject. Thank you again for honoring my brother Bob as you did.

GEORGE MARSHALL

New York, N.Y., 15 May 1957.

EDITOR, *Pacific Discovery*

May I offer congratulations on your admirable editorial on "The Worth of Wildness," and the prominence you have given it in *Pacific Discovery*.

Belmore Browne and Bob Marshall were both my very close friends and I have worked for many years with them in the cause of Conservation. Another dear friend whom you do not mention was Bob Yard (Robert Sterling Yard) who founded the Wilderness Society and who gave up a successful publishing business (Moffett Yard & Co.) to edit *The Living Wilderness*.

The wilderness is like many other precious things—we value it most when it is gone. There is much that needs to be done right here in California, particularly on the appalling and needless destruction by fire of our forests, California's most precious possession. I have plead with the powers that be until my head aches but they just won't provide the only practicable means for preventing forest fires — spotting the first smoke and snuffing it out before it runs wild.

It is futile to talk and write about the esthetic value of the wilderness and then sit idly by and watch it burn.

The living wilderness has done me service of incalculable value. Such success as I may have had in my chosen field of science I owe to the early discovery that I could do a year's work in ten months but I could not do it in twelve.

My most precious trophy of the wilderness is a mountain on the crown of the northern Rockies, in British Columbia, which bears two glaciers: one of them flows through the Peace and Mackenzie rivers to the Arctic Ocean; the other flows south through the Fraser River to the Pacific Ocean. Its name on the map begins with V.

FREDERICK K. VRELAND

Mill Valley, Calif., 11 May 1957.

(Continued from page 10)

facture in the root sense of the latter word. This is a typically and soundly English book about old but still sound crafts and craftsmen. Here are the gold-beater, pewterer, textile printer, fletcher, paper-maker (and -marbler!), parchment-maker, horner, and many others, with the history and description of their very living crafts.

Dictionary of Arts and Crafts. By John L. Stoutenburgh, Jr. Philosophical Library, New York. 1956. vii + 259 pp. \$6.00.

This is far from being *Adeline's Art Dictionary* (1891) brought up to date, but will serve many uses quite adequately for some time to come, even without illustrations.

D.G.K.

EDITOR, *Pacific Discovery*:

I wish from my retreat here in the mountains of Mexico to congratulate you on . . . your editorial of [March-April]. The worth of wildness is far different for different type persons. Once for me it was the High Sierra of California and then later it was the mountains of northern Luzon. . . . Then later it was the jungles of Brazil and now it is the slopes of mighty Orizaba and the cofre peak of Perote. Sitting here in my office at . . . some 3,000 feet above sea level I can look out my window and upward to those peaks which are almost 19,000 feet above the sea — 16,000 feet above me here. Just to my south there are tigers and I have a few of their skins on my walls here and mixed with them are the skins of huge reptiles and my collection of insects for you see I am an entomologist. . . .

But let's get back to that editorial. I am now 75 years of age. Let me quote your own words [or rather, Carleton S. Coon's, as quoted from *The Seven Caves*.—Ed.]: ". . . Wild animals always arrive at a state of natural balance with other elements in their environment."

Does that also apply to humans for we are animals and often are wild? At 75 I am still able to climb these lofty peaks, walk for hundreds of kilometers in the jungles and chase an insect as though I were still a young boy. I am in perfect balance with the wilderness but also I am completely out of balance with my old friend Market Street or Bancroft Way. Fact is I hate them in my old age and in my hate I stay away so that I won't see them. But when I was a reporter on the old [San Francisco] *Chronicle* under Edward de Young I loved them far more than I ever loved my beautiful sweethearts.

But look out. Wilderness life can do much harm to editors and reporters for they even forget how to write decently or correctly. You see in these jungles I have become a native and I speak very little English. My language is Spanish, Mayan, Zampollian and a mixture of Aztec and Juitzole. Why out at the museum in Golden Gate Park I stood looking at some stuff I had sent there many years ago and for awhile I was thinking in my old language of the islands, Ifagoa. So English can become a strange language for one who loves wilderness places.

Write about wilderness places, honor us who live in those wildernesses but stay with your editorial job. You must never destroy that writing ability of yours. No wilderness is worth such a thing.

DR. LARRY TABERT, Ph.D.
Director

Investigaciones Científicas de Trópicos
Calle Aldama 30, Coatepec, Veracruz, Mexico,
14 May 1957.

Dr. Paul Hurd, one of our "amber" authors, sent Dr. Tabert the issue of PD. It always gives us a particular thrill to hear from a reader in what is, from where we sit, a remote spot on earth. But far from strengthening our hand on the typewriter, this letter is one to send us out at once to buy a one-way ticket to any good wilderness.—Ed.

"Isle of Mines"

EDITOR, *Pacific Discovery*:

The little whale [March-April, p. 28] is ours in the Catalina Island Museum, and we are surprised and delighted to have it used. The shining spot on it, the same on both sides, is due to the depression of perhaps a finger rubbing as a talisman.

CATHERINE MACLEAN (MRS. OLIVER S.) LOUD
Berkeley, Calif., 19 April 1957.

BOOKS BY MAIL

. . . from the Academy

THE GOLDEN TREASURY OF NATURAL

HISTORY by Bertha Morris Parker \$5.35

A book brimming with exciting and sound information — for children and adults as well — about the world around us. Includes more than 500 color plates of birds and reptiles, fishes and insects, mammals, amphibians, plants, trees, flowers. 210 pages.

FIELD BOOK OF THE SKIES

by William T. Olcott as revised and edited by R. Newton and Margaret Mayall. \$5.35

A fascinating introduction to astronomy for the beginner and amateur and a valuable reference work for the professional. This is a new edition of Olcott's work revised and edited by R. Newton and Margaret Mayall. 480 pages.

ALL ABOUT DINOSAURS

by Roy Chapman Andrews \$2.15

A world-famous scientist tells about hunting dinosaurs with a whisk broom, about armored dinosaurs and flying dragons that lived 100 million years ago. Drawings; 150 pages suited to children from 9 to 12.

THE GOLDEN BOOK OF SCIENCES

by Bertha Morris Parker \$4.20

The world of science explained clearly and accurately. Profusely illustrated with more than 450 color plates covering many branches of science. For children 9 to 12. 90 pages.

INSECTS CLOSE UP

by Edward S. Ross \$1.65

Insects Close Up is a photographic survey of the insect world. Short, lively, authoritative text accompanies each of the 125 close-up photos and drawings. ". . . an outstanding contribution to the field of popular natural history . . ." Arthur C. Smith, San Francisco *Chronicle*.

WALT DISNEY'S LIVING DESERT

\$3.15

A brilliant and exciting story of the teeming plant and animal life of our Western deserts. Based on the Disney motion picture "The Living Desert." Lavishly illustrated in color. 124 pages.

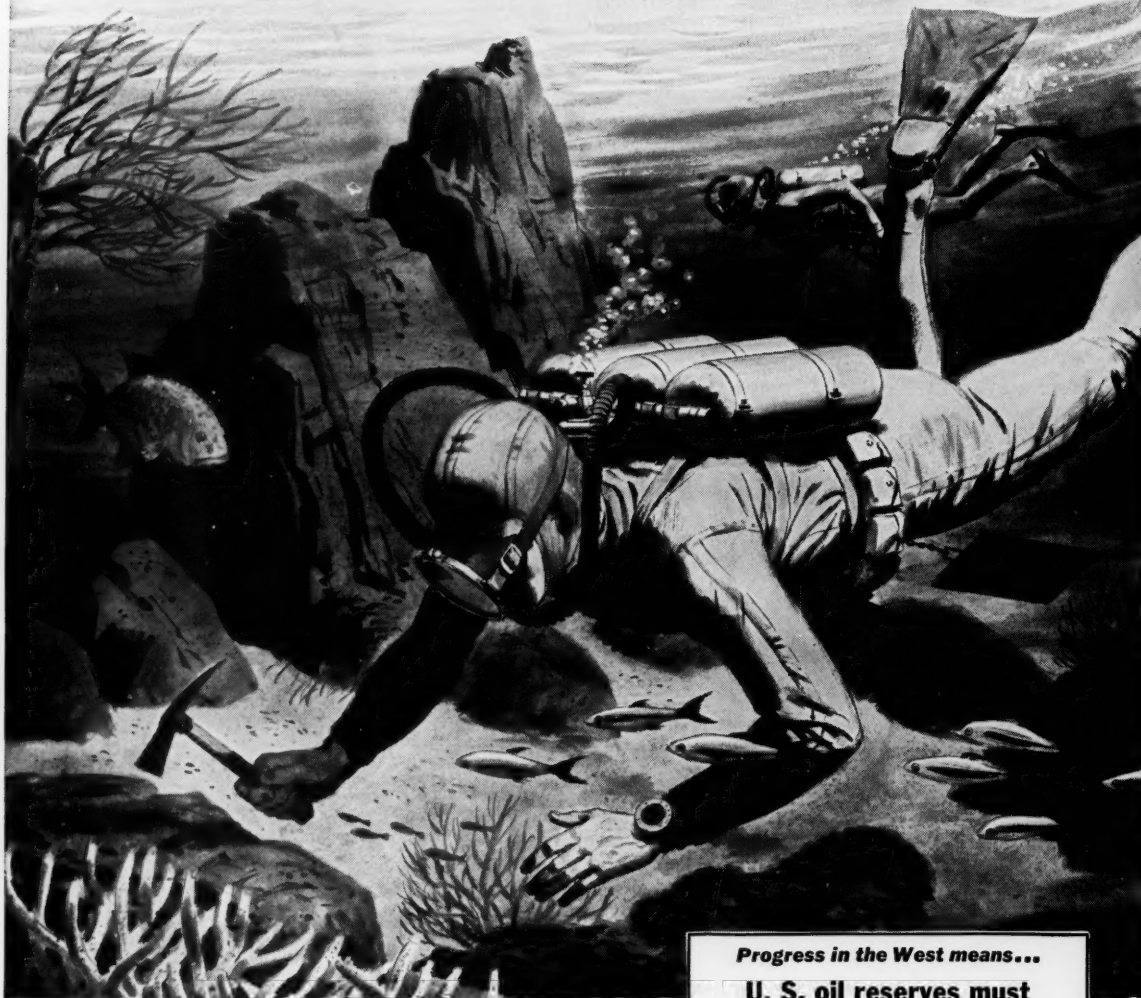
All prices as shown above include tax and postage.

Send order and check or money order to:

CALIFORNIA ACADEMY OF SCIENCES

Golden Gate Park, San Francisco 18, California

How Standard's explorers help find the 830 gallons of oil you'll need this year



Oil geologists probe the ocean floor for clues to potential new oil fields

THE OCEAN FLOOR is the newest frontier in our search for oil to help meet the growing demand of motorists, home owners, farmers, industry and the Armed Forces.

Last year Standard's scientists explored millions of acres offshore and on land in the Western Hemisphere. Once again we discovered new oil deposits that will help supply the 830 gallons of petroleum everyone in the U. S. will use this year... and the 1000 gallons they'll need by 1965.

With oil becoming increasingly difficult and expensive to find, Standard is investing more and more in exploration... \$119,000,000 last year. That's one way we can find new oil to help keep ahead of the nation's growing need for products from petroleum.

Progress in the West means...

U. S. oil reserves must continue to keep pace with rising demand



Daily U. S. oil consumption has risen from 5 million barrels in 1946 to 9 million barrels in 1956 and is expected to reach 12½ million by 1965.



STANDARD OIL COMPANY OF CALIFORNIA
plans ahead to serve you better

